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Geschäftsführung KI, Auf der Ochsenweide 10, 66133 Saarbrücken

During the shooting for his new film *The Digital Dilemma*:

Interview by Klaus Scheidsteger with **Fiorella Belpoggi**, Head of Research at the Ramazzini Institute in Bologna, Italy –

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Foreword by Klaus Scheidsteger

For my new cinema documentary project "The Digital Dilemma", I visited the great lady of cancer research, Prof.Dr. Fiorella Belpoggi, twice at the Ramazzini Institute, in Palazzo Bentivoglio near Bologna.

In her capacity as director of the research centre at the "Cesare Maltoni Cancer Research Centre" there, she had recently devoted herself intensively to the field of high-frequency electromagnetic fields. Once as an independent and freely financed study on rats and mice ("Ramazzini Study"), most recently the "STOA Study" on the health effects of 5G on behalf of the European Parliament.

Both studies are considered to be of great importance in research circles, but they are also attacked or downplayed, as is usual with this topic.

During my first visit, on 9 March 2023, I witnessed a moving situation. Fiorella Belpoggi returned to her old workplace for the first time after a thirteen-month absence due to illness for our preliminary discussion. And as soon as we took our seats in her office, small delegations of 4, 5 or 6 staff members appeared, each of them very touched by this return, with tears in their eyes, hugging their wonderful boss.

Fiorella Belpoggi had been in intensive care for months, hovering between life and death. "It's a miracle that my head is working again like before, thank God I can participate in life again and soon in research," she tells me.

A great privilege of my film work has always been to meet such wonderful people.

Dottore Belpoggi still has a lot to do in the field of research and she can benefit from funding that is extremely admirable for today's science: the renowned institute is supported by 35,000 sponsors who can make their donation tax-deductible.

Not least the worldwide recognition due to the long list of evidence for cancer-causing substances (such as some pesticides, asbestos, benzene, etc.), which the Ramazzini Institute had provided under Fiorella Belpoggi's leadership and which had led to sometimes drastic changes in the law, makes her work so valuable.

She can only smile about attempted trivialisation on the part of the BfS or ICNIRP.

During my second visit in April 2023, we experienced a Fiorella Belpoggi who was fully alive again and who did not miss the opportunity to cook an original lasagne a la Bolognese for my camera team and me after the filming was done.

Mama mia!

Here are some excerpts from the interview, which will be included in this and other parts of the film. This is going to be something!

> - Ramazzini-study on EMF, what happened why did you do the study and what are the results telling us?

Prof. Dr. Fiorella Belpoggi:

The nomination of the studies of the Ramazzini Institute has always followed the rule of focusing research on very widespread compounds/agents, to which millions if not billions of people are exposed, and of which too little is known to rule out a risk to workers in the sector and to the general population as a whole. The different window of susceptibility during the life-span are also considered. This was also the case for RFEMF. The results of our research have been predictive during the 50 years of our activity and they have formed the basis for regulations on exposure limits for humans. Vinyl chloride (plastic monomer at the basis of pvc production) benzene, some pesticides, asbestos and its possible substitutes, solvents, fuels, octane enhancers, are just a few examples. The model we use most is the Sprague Dawley rat of our colony, which has both incidence and type of cancer and other chronic diseases very similar to those of humans, but with the great advantage of having a maximum lifespan of 3 years, corresponding to 90 years in man.

In 2011, IARC classified radiofrequency electromagnetic field radiation as a possible human carcinogen (Group 2B). According to IARC, animal studies, as well as epidemiological ones, at the time showed limited evidence of carcinogenicity. In particular, an increased risk to develop brain tumors and vestibular Schwannoma was observed in two case-control studies in humans.

The National Toxicology Program (NTP) and the Ramazzini Institute (RI) recently completed their long-term carcinogenicity bioassays rats on RFEMF in. The study by the NTP found clear evidence of an increased risk of malignant Schwannomas of the heart in male rats with high exposure to radiofrequency radiation at frequencies in cell phones of the 2 and 3 Generations (2G, 3G) as well as some evidence of increased risks of gliomas in the brain and tumors of the adrenal glands; equivocal evidence of increased risk of tumors was found in mice or in female rats. The RI carcinogenicity study on rats, aimed to evaluate the carcinogenic effects reproducing the environmental exposure to RFEMF generated by 1.8 GHz Global System for Mobile communication (GSM) antennae at radio-base stations for mobile phones, showed a statistically significant increase in malignant schwannomas of the heart in males and an increase in glial malignant tumour of the brain in females.

The recent NTP and RI RFEMF studies presented similar findings in heart Schwannomas and brain gliomas, strengthening the reciprocal results. In conclusion, sufficient evidence of positive associations have been observed between RFEMF exposure and glial tumors of the heart (schwannoma) and brain (glioma) in long-term rodent cancer bioassays.

The results of the NTP and RI long-term bioassays, along with epidemiological and mechanistic evidence, suggest that glial tissues are a specific target of the carcinogenic potential of RFEMF and provide a solid evidence-base for risk assessment and preventive strategies related to RFEMF.

> -STOA-report: Why were you chosen, what is the international situation regarding 5G and such, what did you recommend and why?

Prof. Dr. Fiorella Belpoggi:

The request for the Panel for the Future of Science and Technology (STOA) was made to me in 2020, when I was the scientific director of the Ramazzini Institute and the Cesare Maltoni Cancer Research Center. Our laboratory in 2018 had published the results of the study on third-generation radio frequencies of 1.8 GHz (3G) helping to strengthen the results of the American NTP. This was the reason for my appointment, since at the time I was frequently involved in radio frequency conferences and interviews on their safety.

The scoping review search was performed by Dr. Daria Sgargi, PhD, Master in Biostatistics , and Dr. Andrea Vornoli, PhD in Cancer Research , Ramazzini Institute, Bologna. Dr. Daniele Mandrioli, MD, PhD, Ramazzini Institute, Bologna (Italy), advised me and reviewed the methodology; Prof. Carlo Foresta, MD, and Prof. Andrea Garolla, MD, Professors of Endocrinology and Andrology, University of Padua (Italy), who critically reviewed the results on reproductive adverse effects in humans; Prof. Fausto Bersani, Physicist, Consultant, Rimini (Italy), who assisted me in the interpretation of papers regarding the exposure scenario.

Using PubMed and the EMF Portal database, and applying to our research the scoping review methodology, we found 950 papers on the carcinogenicity of RF-EMF in humans, and 911 papers on experimental rodent studies, totalling 1861 studies. Regarding reproductive/developmental studies, we found 2834 papers for epidemiology and 5052 studies for experimental rodent studies, totalling 7886 studies. From the present review of the literature and the considerations reported above, we come to the following conclusions

The review shows:

1) **5G lower frequencies (700 and 3600 MHz):**

a) limited evidence of carcinogenicity in epidemiological studies;

b) sufficient evidence of carcinogenicity in experimental bioassays;

c) limited evidence of reproductive/developmental adverse effects in humans;

d) sufficient evidence of reproductive/ developmental adverse effects in experimental animals.

2) **5G higher frequencies (24.25-27.5 GHz)**: the systematic review found no adequate studies either in humans or in experimental animals.

> - The ongoing litigation in Washington D.C. - the so called Brain-tumor cases. Any message to send?

Prof. Dr. Fiorella Belpoggi:

The evidence of an association between cellular phone use and the risk of glioma and Schwannoma (neurinoma) in adults and experimental animals is quite strong; in my opinion, RF exposure probably causes gliomas and neuromas.

> - The importance of independent science.(5/6 is sponsored by industry …-conflict of interest like shown within the ICNIRP-r4eport)

Prof. Dr. Fiorella Belpoggi:

Since the beginning of the last century, two operations have been carried out that have undermined the independence of science. The first operation was the division into two cultures: the humanistic and the scientific, which has become increasingly technological. The second operation was the birth of an alternative 'culture', sponsored by power (of any kind) and became reasonable and common sense, ready to provide an aseptic suggestion, lasting over time and naturally well paid.

This has happened for various reasons: thirst for power, calling back money, calling back an undeservedly easy career based on indolence and condescension. So, to come to your question, science today is only in rare cases free and at the service of citizens. I do not believe that we can recover the dignity and credibility that science has always had. In such a 'cultural' matrix the doctor is no longer *doctus.*

> - **your personal message to consumers, politicians and scientists around the world?**

Prof. Dr. Fiorella Belpoggi:

The source of RF emissions that seems at present to pose the greatest threat is the mobile phone. Though transmitting installations (radio-base masts) are perceived by some people as providing the greatest risk, actually the greatest burden of exposure in humans generally derives from their own mobile phones, and epidemiological studies have observed a statistically significant increase in brain tumours and Schwann cell tumours of the peripheral nerves, mainly among heavy cell-phone users.

Since 5G aims to be more energy-efficient than the previous technologies, adopting stricter limits in the EU for mobile phone devices will be at once a sustainable and a precautionary approach.

Much of the remarkable performance of new wireless lower frequencies 5G technology can also be achieved by using optic-fibre cables and by adopting engineering and technical measures to reduce exposures from 2-4G systems. This would minimize exposure, wherever connections are needed in fixed sites. For example, we could use optic fibre cables to connect schools, libraries, workplaces, houses, public buildings, and all new buildings etc. and public gathering places could be 'no RF-EMF' areas (as we have for cigarette smoking) so as to avoid the passive exposure of people not using a mobile phone or long-range transmission

technology thus protecting many vulnerable elderly or immune-compromised people, children, and those who are electro-sensitive.

Information campaigns should be carried out at all levels, beginning with schools. They should show the potential health risks, but also the opportunities for digital development, what infrastructural alternatives exist for 5G transmission, the safety measures (exposure limits) taken by the EU and Member States, and the correct use of the mobile phone.

Only by sound and accurate information can we win back citizen trust and reach a shared agreement over a technological choice which, if properly managed, can bring great social and economic benefits.

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