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A Report on Non-Ionizing Radiation

Finns See RF-Chemical Synergy

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Getting a handle on EMF and RF effects is a frustrating business. A new paper in the March 9 issue of *Mutation Research* from Finland's University of Kuopio tells the story. The Kuopio research group found that mobile phone radiation, at 5 W/Kg, can amplify the DNA damage caused by a chemical mutagen. This is far from the first time an RF-induced genotoxic effect has been reported (see our September 3, 2008 post). What's surprising and unexpected is the increased DNA damage was seen only after exposure to continuous wave (CW) radiation, not to pulsed GSM radiation. Most observers would say that, for the same average SAR, the GSM signal would be more likely to cause biological effects because the intensity of each pulse is greater than the average. (The empty spaces between the pulses smooth out the peaks and bring the average intensity down.) In some cases, both the CW and the pulsed signal may have the same genotoxic effect, as Henry Lai and N.P. Singh reported back in 1996. But the Finns found the increased DNA damage *only* for the CW, not the GSM, signal. As they note: "[T]his result is not supported by observations from experiments with GSM-modulated RF radiation." They put the best face on what they found, concluding: "This is not an unusual situation in the literature on biological effects of RF radiation. Contradictory results are often reported, and different RF signals, cell types, and SAR levels complicate comparison between studies." True, but that can hardly be the end of the story. There's a lot more to sort out before we understand what's going on.

The Kuopio group includes a nearly exhaustive list of RF-genotox papers. But two notable papers are missing: those from Hugo Rüdiger's lab at the University of Vienna. This smacks of historical revisionism. Though some have claimed that a member of Rüdiger's lab engaged in scientific misconduct and that all the resulting RF-DNA work should be trashed, this is still very much a conjecture and remains far from proven.

DNA breaks, synergy, Finland, Kuopio, Henry Lai, N.P. Singh, Hugo Rüdiger,

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