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COMMENTARY ON PAPER BY HUBNER *ET AL*

The Perth Group
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On 27th March 2009 Hubner *et al* published a paper in *Science*[1] in which it was claimed "With use of an infectious, fluorescent clone of HIV, we tracked the movement of Gag in live CD4 T cells and captured the direct translocation of HIV across the virological synapse".

By "infectious, fluorescent clone of HIV" the authors meant a length of DNA claimed to code for proteins said to be "HIV", including one known as "Gag" (**g**roup specific **a**nti**g**en). The adjective "fluorescent" refers to the insertion into the Gag region of an extraneous DNA, one which codes for a protein that fluoresces green when exposed to blue light. The experiments involved manipulation of this combination of "viral" and non-viral DNA which the authors referred to as "This virus". They claimed "This virus faithfully reveals Gag localization, allowing infected cells and viral particles to be tracked with high sensitivity (12)". Reference 12 is another paper[2] from the same group using the same technique.

The Hubner paper does not provide any data on the laboratory methods used to "infect" the cells or to prove the DNA in which they inserted the DNA of the GFP is the genome of a unique retrovirus particle. All their data show is movement of the green protein either inside the cell or its transfer from one cell, allegedly "infected" with "This virus", to another cell. Because for "infection" they used "HIV Gag-iGFP", they assumed but without proof that (a) the addition of several hundred nucleotides to the "HIV DNA" had no effect on the transcription, translation and processing/packaging of the "HIV" proteins; (b) the HIV Gag protein is attached to the green fluorescent protein and moves in concert with it. Most importantly, nowhere in this paper, or in their reference 12, is there any evidence for the existence of virus particles. All they have is an accumulation of green protein in some buds at the cell surface and transfer to another cell. Such buds will appear in any cell, especially malignant cells such as the Jurkat cells used for the experiments*. These buds are the result of actin polymerisation and contraction of the actin/myosin system, namely, proteins present throughout all cells.[3-5] Significantly, the authors reported that "Synapse-mediated viral transfer is potently inhibited by actin inhibitors such as cytochalasin D". Also note, there are no controls in this experiment. If the authors had used proper controls and the experiments had been done blindly, their conclusions may have been totally different. In our view, the claim by AIDSTruth, "In what is surely a serious blow to AIDS denialists, researchers have published video microscopy of HIV transferring between T-cells", is not supported by the evidence.

*http://en.wikipedia.org/wiki/Jurkat_cells

Please note:
The Gag green fluorescent protein (GFP) has been used in other experiments involving "HIV". Below are two questions we asked Dr. Sandord Simon, from the Laboratory of Cellular Biophysics, The Rockefeller University, New York, who co-authored such a paper[6] published in *Nature* in 2008. He did not reply.

1. Your data show discrete fluorescent puncta (points) of closely packed gag/GFP and other proteins "that apparently localise at the plasma membrane" and in the extracellular space. Yet you claim evidence for virus-like particles, virions, budding virions and as the title shows "...biogenesis of individual HIV-1 virions in live cells". On what do you base your claims? [In other words, since viruses are submicroscopic particles, without electron micrographic proof it is impossible to claim there are "virus-like particles, virions, budding virions" or "…biogenesis of individual HIV-1 virions in live cells"].

2. You used HeLa cells, a malignant cell line. Malignant cells exhibit buds even when uninfected with any virus.[7] As far back as 1974 Hans Gelderblom reported VLPs in HeLa cells.[8] Assuming you have data demonstrating VLPs, buds, free particles, virions, how can you interpret your images as representing HIV and not cellular phenomena given the fact you did not report controls? [VLPs = virus-like particles].

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