

Abstract Submitted
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A Quantum of Solace: molecular electronics of benzodiazepines¹

LUCA TURIN, MIT, ANDREW HORSFIELD, Imperial College London, MARSHALL STONEHAM, University College London — Benzodiazepines and related drugs modulate the activity of GABA-A receptors, the main inhibitory receptor of the central nervous system. The prevailing view is that these drugs bind at the interface between two receptor subunits and allosterically modulate the response to GABA. In this talk I shall present evidence that benzodiazepines work instead by facilitating electron transport from the cytoplasm to a crucial redox-sensitive group in the gamma subunit. If this idea is correct, benzodiazepines should not only be regarded as keys fitting into a lock, but also as one-electron chemical field-effect transistors fitting into an electronic circuit.

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