COMPUTER ANALYSIS OF RADIATION (NON-IONIZAING) INDUCED PATTERNS OF CELLULAR MORTALITY

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The heterogeneous mass of conflicting reports on the modality of radiation-induced cell mortality reflects the need for multivariable function analysis. The conceptual construction of the system involves "induction by conjecture" and, as such, can neither derive nor determine the existence of its components. The significant contributions of this approach would be in (i) the evaluation of the basic premises implicit in the model, (ii) the functional explanation of the component role relative to the system, (iii) interlevel and intersystem analysis, and (iv) the implementation of concept formation for higher level phenomena.

With the aforementioned perspective in mind, the following information represents the initial development of the project. The project is concerned with functional analysis of radiation-induced survival patterns of S-180 cells in tissue culture. Illustrations are provided of the respective isomorphic (mathematical model) and homomorphic (electronic analog) identities to a simple conceptual subsystem, the function of which is to minimize radiation-induced strain. Mouse Sarcoma 180 cells are irradiated (ca 2537Å; ca 20 ergs/mm^2/sec) for various intervals of time to obtain standard mortality patterns. Present studies concern the parabiotic growth of sublethally and lethally irradiated cells in an attempt to observe a probable metabolic role of cellular diffusates (detailed techniques to be presented). Statistical operations and kinetic analyses are performed with analog and digital computers.

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