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Test of Cairns-Smith's Crystals-as-Genes Hypothesis. B. Kahr, T. Bullard, S. Avagyan, M. Kurimoto, Dept. of Chemistry, Box 351700, U. of Washington, Seattle, WA 98195-1700.

In *Genetic Takeover and the Mineral Origins of Life (*GT*,* 1982), Cairns-Smith (CS) proposed that clay minerals played the role of genes in the first 'living' organisms. CS envisioned a means for replication through crystal growth, with information stored in patterns of defects. The mutual disposition of the mistakes is then transferred from one crystal to another via fragmentation and epitaxy. Ultimately, according to CS, the crystal gene transferred its information to biopolymers by adsorbing and organizing precursor molecules. CS's ideas have captured a firm place in origin-of-life science, despite the fact that they are without any experimental support after more than 20 years. Herein, we describe a laboratory investigation of GT. Specially, we aim to determine whether information contained in the spatial disposition of screw dislocations in a model crystal system, potassium acid phthalate (KAP), can be transferred from one crystal to another. A key to this demonstration is our ability to label crystal defects with organic luminophores, an outgrowth of our long-standing study of the process of dyeing crystals. Moreover, we will describe attempts to transfer the information inherent in the spatial disposition of growth defects into patterns of luminescence from nucleotides that form mixed crystals with KAP.