

the Gene - "Mirror writing"

[Siddhartha Mukherjee: the Gene](#)

(pages 329-330)

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Typos and links are all mine

Text is set in black Georgia 12 pt. my additions are set in crimson Trebuchet 10.pt

Medicine, the sociologist [Everett Hughes](#) (1897-1983) once observed wryly, perceives the world through "mirror writing". Illness is used to define wellness. Abnormalcy marks the boundaries of normalcy. Deviance demarcates the limits of conformity. This mirror writing can result in an epically perverse vision of the human body. An orthopedist thus begins to think of bones as sites of fractures; a brain, in a neurologist's imagination, is a place where memories are lost. There is an old story, probably apocryphal, of a Boston surgeon who did lose his memory and could only recall his friends by the names of the various operations he had performed on them.

Throughout much of the history of human biology, as the science writer [Matt Ridley](#) noted, genes too were largely perceived in mirror writing—the *cystic fibrose* gene, the *Huntington's* gene, the *breast-cancer-causing BRAC1* gene, and so forth. The sole function of the "benign" breast cancer gene *BRCA1* is to make sure that DNA is repaired when it i damaged. The hundreds of mllions of women without a family history of breast cancer inherit this benign variant of the *BRCA1* gene. The mutant variant or [allele](#)—call it *m-BRCA1*—causes a change in the structure of the *BRCA1* protein such that it fail to repair damaged DNA. Hence cancer-causing mutations arise in the genome when *BRCA1* malfunctions.

The gene called *wingless* in fruit flies encodes a protein whose real function is not to make wingless insects, but to encode instructions to build wings. Naming a gene *cystic fibrosis* (or CF), as Ridley observed, is "as absurd as defining the organs of the body by the diseases they get: livers are there to cause [cirrhosis](#), hearts to cause heart attacks, and brains to cause strokes."