# [PDF] Mutants: On Genetic Variety And The Human Body

## Armand Marie Leroi - pdf download free book

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Author: Armand Marie Leroi
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### Description:

**From Publishers Weekly** In a book that's as disturbing as it is enlightening, as unsettling as it is compelling, Leroi examines all sorts of genetic variability in humans and explains how that variability helps scientists understand the processes associated with human growth and development. Leroi, recipient of a Scientist for the New Century medal from the Royal Institution of Great Britain, demonstrates, in both text and pictures, that an enormous amount can go wrong as humans develop from fertilized eggs and progress toward old age. The missteps can result from

genetic or environmental causes, with the latter occasionally responsible for the former. Although the subjects Leroi presents conjoined twins, individuals with cyclopia (a single eye), deformed or missing limbs, abnormal height, supernumerary breasts, an overabundance of body hair, piebald coloring often appear grotesque, he approaches all of his topics and each of his human subjects with great respect. Leroi uses each example to demonstrate the developmental lessons they illustrate: e.g., the role of fibroblast growth factors in the formation of limbs, the pituitary's impact on body size. By explaining that each of us carries hundreds of mutations within us, he asserts that we are not all that different from those who, on first glance, appear very disparate. Similarly, he effectively dismisses the belief that human races are anything more than a convenient social construct, establishing that there is no biological basis for such categorization. While the graphic pictures might deter some, they add immeasurably to the text.


**From The New England Journal of Medicine** This book is "about the making of the human body." Armand Leroi, a reader in evolutionary developmental biology at London's Imperial College, thus joins the multitude of writers who are attempting to gratify our narcissistic focus on "the body." His slant is genetic, and his approach is to employ the story of variation, hence the title and subtitle of his book. Leroi takes vignettes from famous historical cases of human "mutants" to provide interest and background for his discussions of the principles of developmental biology (what used to be called "embryology"). The nature of the subject leads him to emphasize genes and morphogenesis, certainly a fascinating area in recent years. Leroi starts his discussion with famous "monsters" in history -- some mythical, some well known, and some obscure, but all quite interesting. Famous examples include cases of conjoined twins, persons with hypertrichosis, and cyclops. The author is at his best in his lively writing regarding the historical context of these cases. He takes up examples of limb malformations, disorders of stature, and cases of intersex (more commonly known as hermaphroditism). The mysteries and medical theorizing of the past are presented in a sensitive voice and are followed by explanations of the current biologic thinking about the processes that appear to underlie these disorders. Leroi's accounts of the human lives touched by these variations are revealing of our historical biases. For example, he illuminates the curious association between ectrodactyly (the lobster-claw syndrome) and the cruel punishment of two religious dissenters in 1685 and shows how the connection reflects the pervasive belief that malformed children are born as retribution for parental transgression. These stories exhibit the wide range of human variation as well as the sometimes astonishing ways in which the affected human beings have managed to fit within their culture and society. In trying to craft scientific explanations that fit the tone and detail of the historical account, the author runs into a few problems. It is always difficult to convey complex ideas about, say, transcription factors and their role in sex determination to a readership that presumably does not have a detailed knowledge of the entire process of transcription. As the biologist Lewis Wolpert has noted, much of modern science is counterintuitive, so Leroi's task is especially daunting. He has attempted much, but it seems to me that his explanations are apt to be more mystifying than edifying to many readers. To the student of current biology, these passages will be a useful summary, but for the hypothetical "general, well-informed" reader, discussions of morphogens, cell receptors, and aromatase are likely to be underappreciated. Although Leroi simplifies and streamlines as best he can, there are some places where this approach can seem to be misleading -- for example, when he asserts early in the book that mutations are "deficiencies in particular genes." To be fair, toward the end of the book, he tries to reverse this rather flat-footed definition of mutation. Sometimes, too, the distinction between genetic causes and nongenetic developmental accidents (e.g., virus infections) is not made sufficiently clear. Read this book for the fascinating tales of human variation and the lives of those affected; the clinical genetics may also be of interest. *William C. Summers, M.D., Ph.D.*

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