

1. Record Nr.	UNINA9910253916503321
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Titolo	Evolution in the Dark : Darwin's Loss Without Selection // by Horst Wilkens, Ulrike Strecker
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 2017
ISBN	3-662-54512-8
Edizione	[1st ed. 2017.]
Descrizione fisica	1 online resource (IX, 217 p. 107 illus., 59 illus. in color.)
Disciplina	576.8
Soggetti	Evolutionary biology Animal genetics Developmental biology Animal systematics Animal taxonomy Biodiversity Evolutionary Biology Animal Genetics and Genomics Developmental Biology Animal Systematics/Taxonomy/Biogeography
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Evolution in the dark – introduction -- The role of rudimentation in evolution -- Diversity and phylogenetic age of cave species -- Surface and cave populations of Mexican Astyanax -- Complexity of interrelationship of cave and surface fish -- Regressive and constructive traits in Astyanax surface and cave fish -- Mechanisms of regressive evolution.
Sommario/riassunto	This book provides fascinating insights into the development and genetics of evolutionary processes on the basis of animals living in the dark, such as the Astyanax cave fish. Biologically functionless traits show high variability, which results from neutral deleterious mutations no longer being eliminated by natural selection, which normally acts to preserve functional capability. These negative mutations accumulate until the traits they are responsible for become rudimentary or even

lost. The random genetic basis of regressive evolution is in accordance with Nei's Neutral Theory of Molecular Evolution, which applies to the molecular level. Such processes are particularly conspicuous in species living in constant darkness, where, for example in *Astyanax*, all traits depending on the exposure to light, like eyes, pigmentation, visually triggered aggressive behaviour, negative phototaxis, and several peripheral outcomes of circadian rhythmicity, are useless and diminish. In compensation constructive traits like taste, olfaction or the lateral line senses are improved by selection and do not show variability. Regressive and constructive traits inherit independently, proving that the rudimentation process is not driven by pleiotropic linkage between them. All these traits are subject to mosaic evolution and exhibit unproportional epistatic gene effects, which play an important role in evolutionary adaptation and improvement. Offering valuable evolutionary insights and supplemented by a wealth of illustrations, this book will appeal to evolutionary and developmental biologists alike.
