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Titolo	Understanding statistics and experimental design : how to not lie with statistics / / Michael H. Herzog, Gregory Francis, Aaron Clarke
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ISBN	3-030-03499-2
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Descrizione fisica	1 online resource (XI, 142 p. 35 illus., 29 illus. in color.)
Collana	Learning Materials in Biosciences, , 2509-6125
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Nota di contenuto	Part I -- Basic Probability Theory -- Experimental Design and the Basics of Statistics: Signal detection Theory (SDT) -- The Core Concept of Statistics -- Variations on the t-test -- PART II -- The Multiple Testing Problem -- ANOVA -- Experimental design: Model Fits, Power, and Complex Designs -- Correlation -- PART III -- Meta-analysis -- Understanding replication -- Magnitude of excess success -- Suggested improvements and challenges.
Sommario/riassunto	This open access textbook provides the background needed to correctly use, interpret and understand statistics and statistical data in diverse settings. Part I makes key concepts in statistics readily clear. Parts I and II give an overview of the most common tests (t-test, ANOVA, correlations) and work out their statistical principles. Part III provides insight into meta-statistics (statistics of statistics) and demonstrates why experiments often do not replicate. Finally, the textbook shows how complex statistics can be avoided by using clever experimental design. Both non-scientists and students in Biology, Biomedicine and Engineering will benefit from the book by learning the

statistical basis of scientific claims and by discovering ways to evaluate the quality of scientific reports in academic journals and news outlets.