

Statistical Principles to Live By

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This talk deals with principles derived from over 30 years of applying statistics to biomedical research, collaborating with clinical and basic biological researchers and epidemiologists. The principles relate to statistical efficiency, bias, validity, robustness, interpretation of statistical results, multivariable predictive modeling, statistical computing, and graphical presentation of information. Topics to be discussed include respecting continuous variables, avoiding non-descriptive statistics, problems associated with filtering out negative results, overfitting, shrinkage, adjusting P -values for multiple comparisons without adjusting point estimates for same, and the false promise of multi-stage estimation and testing procedures, related to the use of bogus conditional techniques for computing what is advertised as unconditional variances or type I errors.