

Title:

**Estimating the Positive False Discovery Rate Under Dependence,
with Applications to DNA Microarrays**

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Technical Report number (Dept. of Statistics, Stanford Univ.):

2001-28

Date:

October 2001

Abstract:

When conducting multiple hypothesis tests, it is important to assess the number of false positives in some fashion. One useful error measure is the positive False Discovery Rate (pFDR). We show how to estimate the pFDR when general dependence between the hypotheses exists. This can be done using general statistics, not necessarily p-values, where the Type I error rate for a given rejection region may not even be known. We apply the proposed methodology to the problem of detecting differential gene expression in replicated DNA microarray experiments, where unknown dependence is likely to occur.