

Topological Adjustments to the Genechip Expression Values

Ptitsyn, A.

Pennington Biomedical Research Center, Baton Rouge , LA

$$AvDiff = |A|^{-1} \sum_j \hat{A}_j (PM_j - MM_j)$$

$$PM_{ij} - MM_{ij} = \theta_i \phi_j + \varepsilon_{ij}$$

where $\varepsilon_{ij} \sim N(0, \sigma^2)$. They consider q_i to be expression in chip i . Their model is also fitted to PM only, or to both PM and MM.

As long as we consider the probes scattered across the biochip, we should also take into account the local effects. In case of spoiled chips such effect is obvious to the unaided eye. Big scratches, bubbles, “snow” or partially bleached chips are typically sorted out as defective. “Good” slides usually show no obvious defects and accepted for the further analysis. But the question still remains are there any hidden patterns in what seems to be a randomly speckled field? How uniform this signal intensity is and how this ununiformity can be measured and compared between the chips?