

Probability of observing frequency of EYA4 two-hit disruption in 77 AdC

$$\binom{n}{k} p^k (1 - p)^{n-k}$$

n = 77 samples; k = 15 observed EYA4 two-hit events; p = 0.0016 or the probability of observing a two-hit inactivating event in one gene in one tumor

$$3527930788646881 \times (0.0016)^{15} \times (1 - 0.0016)^{62}$$
$$= 2.648 \times 10^{-27}$$

Total # of probes assessed = 54138

$$2.648 \times 10^{-27} \times \text{total \# probes assessed}$$
$$= 1.433 \times 10^{-22}$$