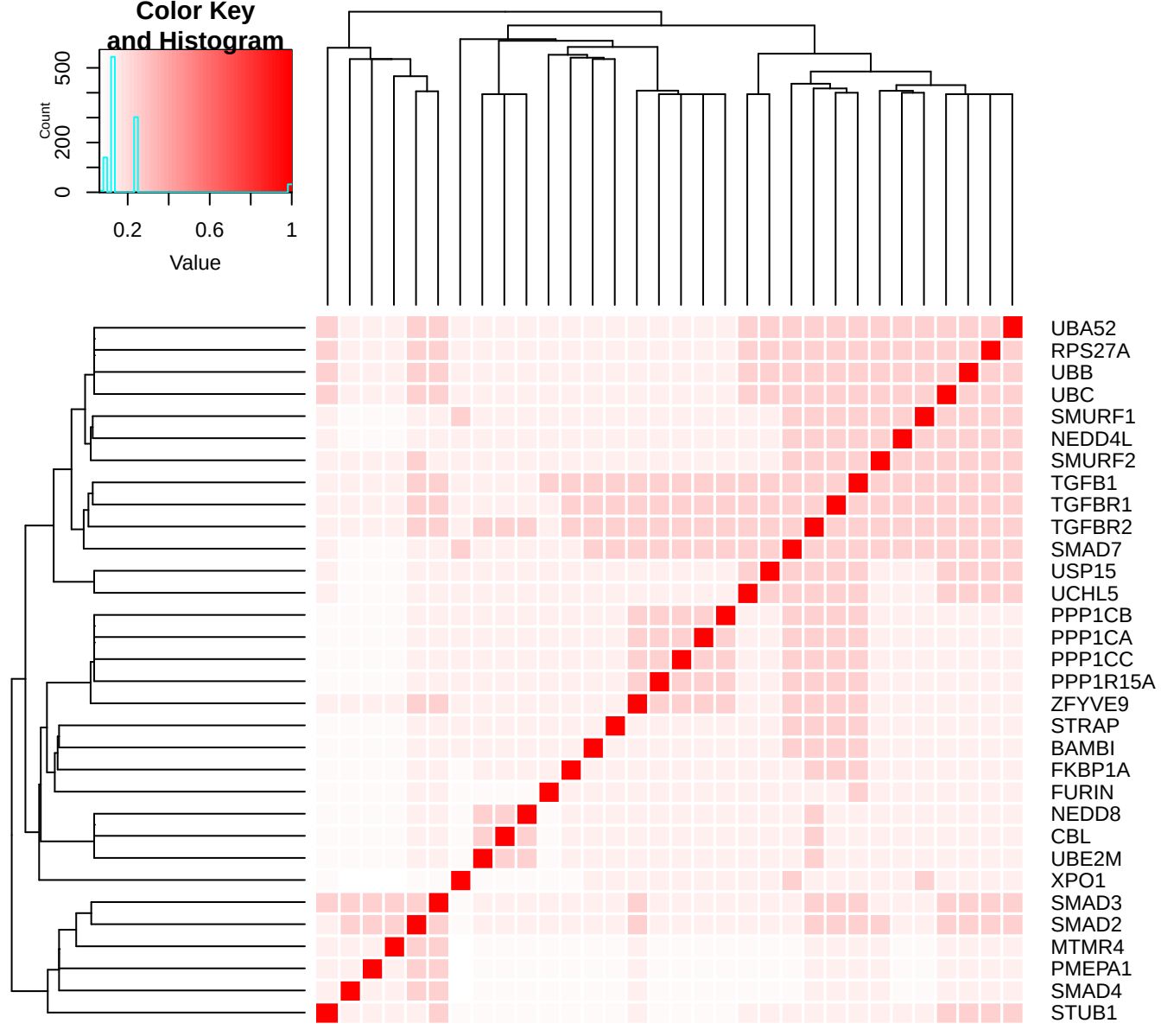

(b) relationship matrix