*(1-u)(1-u)*

*(1-d)(1-p-u+up)*

0-0 $\xleftrightarrow{\substack{u(1-u) \\ d(1-p-u+up)}}$ 1-0

*(1-p-u+up)d* $\uparrow\downarrow$ *u(1-u)*

*(u+p-up)d*

*d(u+p-up)*

*uu*

*(1-d)(u+p-up)*

0-1 $\xrightarrow{(u+p-up)(1-d)}$ 1-1

*(1-p-u+up)(1-d)*

a: Change probability with
   DNA replication
u: Methylation probability
   on unmethylated CpG
p: Methylation probability
   on semi-methylated CpG
d: Demethylation probability