Recitation.

Ex 109 Final.

Zombie → $P(Z)=0.1$.

Protein R.

Z	$P(R\mid Z)$
T	0.99
F	0.02

Test

R	$P(T\mid R)$
T	0.98
F	0.04

test is 98% sensitive to presence of R.

true ⊕ $P(T\mid R)$

test is 96% specific to absence of R.

true ⊖ $P(\bar{T}\mid\bar{R})$.

Q: $P(T\mid Z)$.

$$\frac{P(TZ)}{P(Z)} = \frac{\sum P(T, Z, R=r)}{P(Z)}$$

$$= \frac{P(TZR)+P(TZ\bar{R})}{P(Z)}$$

chain rule

$$= \frac{P(T\mid RZ)P(R\mid Z)P(Z) + P(T\mid \bar{R}Z)P(\bar{R}\mid Z)P(Z)}{P(Z)}$$

$$= P(T\mid R)\cdot P(R\mid Z) + P(T\mid\bar{R})\cdot P(\bar{R}\mid Z)$$

$$= 0.98\times 0.99 = 0.01\times 0.01$$

$$=$$