Model 4 - Multiple proteins, two groups (varying σ and shrink the variance estimates)

$y_{ij} \sim N(\mu_{ij}, \tau_i)$

$\mu_{ij} = b_i X_{ij}$

$\tau_i = 1/\sigma_i^2$

$\sigma_i \sim$Unif(p$_i$, $p_i + w_i$)

$b_i \sim N(0, 1e^{-12})$

$p_i \sim$Unif(0, 10)

$w_i \sim$Unif(0, 10)