


HLA-DRB1*07:01–HLA-DQA1*02:01–HLA-DQB1*02:02 haplotype is associated with a high risk of asparaginase hypersensitivity in acute lymphoblastic leukemia

 **359** pediatric ALL patients



Four-digit typing by next-generation sequencing



HLA-DRB1



HLA-DQB1



HLA-DQA1

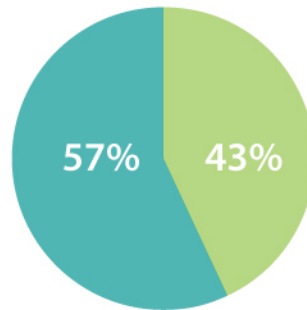


Identification of associations between Human Leukocyte Antigen Class II region alleles and asparaginase hypersensitivity

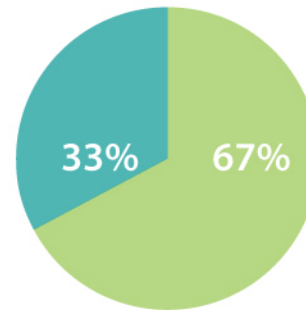
HLA-DRB1*07:01

$p=4.56 \times 10^{-5}$
OR=2.86 (1.73-4.75)

carrier



non carrier

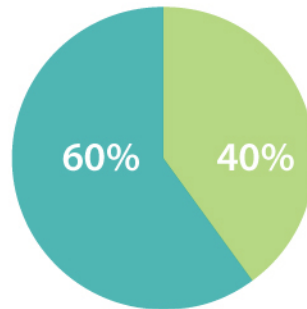


 hypersensitivity
 no hypersensitivity

HLA-DQB1*02:02

$p=1.85 \times 10^{-4}$
OR=2.99 (1.68-5.31)

carrier



non carrier

