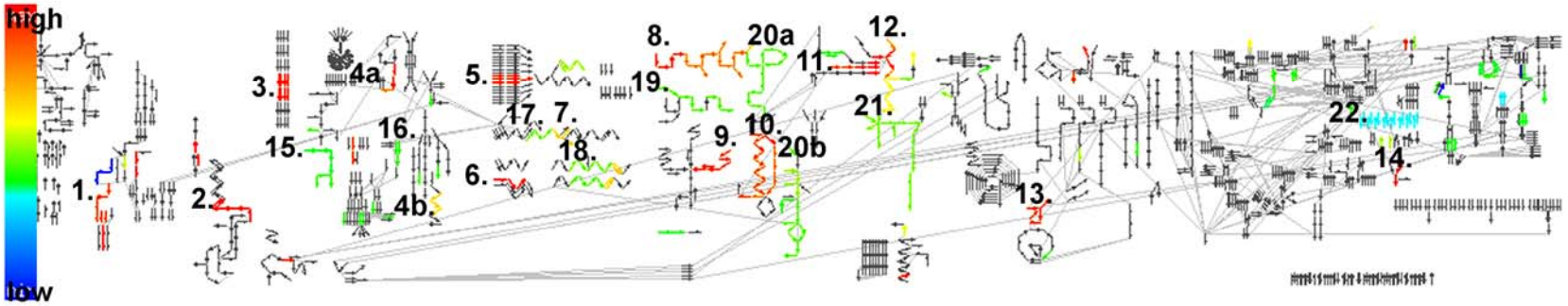
Supplementary Table 1. Description of the NBS carriers.

TRAINING SET			
GM ID	**Mutation (from Coriell Cell Repository Website: http://ccr.coriell.org/nigms/**	**Family ID**	**Relationship to Proband**
GM08036	Clinically normal; borderline chromosome fragility observed in peripheral blood lymphocytes; donor subject is an obligate heterozygote for a deletion of 5 nucleotides in exon 6 of the NBS1 gene, resulting in a frameshift and a premature termination at codon 218 [657-661delACAAA (657del5)].	2100	Father
GM08037	Clinically normal; IgA deficiency; borderline chromosome fragility observed in peripheral blood lymphocytes; donor subject is an obligate heterozygote for a deletion of 5 nucleotides in exon 6 of the NBS1 gene, resulting in a frameshift and a premature termination at codon 218 [657-661delACAAA (657del5)].	2100	Mother
GM15805	Obligate heterozygote; affected children are GM15808 and GM15809; heterozygous for the deletion of 5 bp at nucleotide 657 in exon 6 of the NBS1 gene which results in a premature termination at codon 218 [657-661delACAAA (657del5)]	1836	Mother
GM15806	Obligate heterozygote; affected children are GM15808 and GM15809; heterozygous for the deletion of 5 bp at nucleotide 657 in exon 6 of the NBS1 gene which results in a premature termination at codon 218 [657-661delACAAA (657del5)]	1836	Father
GM15810	Obligate heterozygote; affected children are GM15812 and GM15814; heterozygous for the deletion of 5 bp at nucleotide 657 in exon 6 of the NBS1 gene which results in a premature termination at codon 218 [657-661delACAAA (657del5)]	1837	Mother
GM15811	Obligate heterozygote; affected children are GM15812 and GM15814; heterozygous for the deletion of 5 bp at nucleotide 657 in exon 6 of the NBS1 gene which results in a premature termination at codon 218 [657-661delACAAA (657del5)]	1837	Father
GM15815	Obligate heterozygote; diabetic; affected children are GM15818 and GM15819; heterozygous for the deletion of 5 bp at nucleotide 657 in exon 6 of the NBS1 gene which results in a premature termination at codon 218 [657-661delACAAA (657del5)]	1838	Mother
GM15820	Obligate heterozygote; 2 affected children; proband not in the Repository; heterozygous for the deletion of 5 bp at nucleotide 657 in exon 6 of the NBS1 gene which results in a premature termination at codon 218 [657-661delACAAA (657del5)]	1839	Mother
GM15821	Obligate heterozygote; 2 affected children; proband is not in the Repository; heterozygous for the deletion of 5 bp at nucleotide 657 in exon 6 of the NBS1 gene which results in a premature termination at codon 218 [657-661delACAAA (657del5)]	1839	Father
TEST SET			
GM15816	Obligate heterozygote; deceased; affected children are GM15818 and GM15819; heterozygous for the deletion of 5 bp at nucleotide 657 in exon 6 of the NBS1 gene which results in a premature termination at codon 218 [657-661delACAAA (657del5)]	1838	Father
GM15841	Obligate heterozygote; affected son is GM15789; heterozygous for the deletion of 5 bp at nucleotide 657 in exon 6 of the NBS1 gene which results in a premature termination at codon 218	1834	Father

Supplementary Figure 1.



Pathways with genes that are differentially expressed between NBS carriers and controls. Pathways up-regulated in NBS carriers are: 1). Release of apoptotic factor from the mitochondria, 2). MAP kinase cascade – RAF phosphorylation of MEK1, 3) Notch signaling pathway – Notch receptor binding to ligands, 4a) DNA replication pre-initiation, 4b) DNA strand elongation, 5) Base excision repair – depyrimidination, 6) Polymerase zeta complex, 7) Processing of DNA double strand ends, 8) RNA polymerase II transcription, 9) RNA polymerase III transcription, 10) RNA splicing, 11) Transport of mature transcript to cytoplasm, 12) Translation, 13) Oxidative phosphorylation, 14) Purine catabolism. The down-regulated pathways are: 15) Mitotic spindle checkpoint, 16) G2/M checkpoint, 17) Assembly of RAD50-MRE11-NBS1 at double strand breaks, 18) Nucleotide excision repair, 19) RNA splicing, 20a) RNA polymerase II mediated transcription, 20b) RNA polymerase II mediated transcription elongation, 21) Translation elongation, 22) Reversible phosphorylation of mitochondrial nucleoside diphosphates by nucleoside diphosphate kinase D.