

# REPORT OF THE 12TH UCLA INTERNATIONAL KIR EXCHANGE

MAY 9, 2007

KIR	45-48
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Dear Colleagues:

This is the first UCLA International KIR Exchange report for samples typed in year 2007. We have now completed 12 KIR exchange studies since the program was initiated in 2004.

For the 12<sup>th</sup> KIR Exchange, 4 DNA samples (KDNA#45-48) were shipped to each laboratory on February 7, 2007. Fifty-three laboratories submitted their KIR typing results. The majority of the laboratories used commercial or "in house" developed sequence-specific primer (SSP) based PCR typing systems, and the remaining laboratories used either a sequence-specific oligonucleotide probe (SSOP) method, or a multiplexed SSP method, or the combination of these methods. The majority of the laboratories performed subtyping for 2DL5, 2DS4, and 3DP1.

The results for the 12<sup>th</sup> KIR Exchange are summarized in Table 1 and individual laboratory results reported for each DNA sample are provided in Tables 2-5. Laboratories reported discrepant results for the presence or absence of KIR2DL1, 2DL2, 2DL3, 3DL1, 3DS1, 2DS1, 2DS2, 2DS4 and 2DP1 genes. Discrepant results from the consensus typing are italicized in the listing of results (Tables 2-5), and described in the summation for each sample. Discrepancies at the allele level are not italicized. We encourage the participating laboratories to resolve the discrepancies so that the information can be shared to develop reliable KIR typing systems.

Regarding sample KDNA#44 from the previous KIR#11 Exchange study, the following comments were received from Witt and Christiansen, "As we have suggested, the KIR2DS4 probe pattern was not consistent with known alleles for KIR2DS4" and from Vilches, "We have also studied further cell #44 of the previous exchange, for which we reported a conflicting negative result for 2DS4. This cell also has a novel 2DS4 sequence, which was the origin of our discrepancy."

We thank you for your active participation in this program.

Best regards,

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**KIR Exchange Sample: KDNA # 0045:**

The DNA was isolated from an Asian donor. The consensus KIR type is: 2DL1-2DL2-2DL4-2DL5-3DL1-3DL2-3DL3-3DS1-2DS1-2DS2-2DS3-2DS4-2DS5-2DP1-3DP1. Thirty participating laboratories (57%) reported this DNA carrying KIR2DS4 gene whereas the remaining laboratories (43%) reported that this sample was 2DS4-negative. Five laboratories (Chen, Hsu, Marsh, Noreen, Yu) found a novel 2DS4 sequence. Yu reported that this new sequence was closely related to 2DS4\*003 in the tested regions of exons 3-5, with two amino acid substitutions at codon 52 (ATT>ACT, Ile>Thr) and codon 129 (AGC>AGA, Ser>Arg).

Six laboratories could not confirm the presence of 3DL1 gene in this sample. Vilches and Kusnierczyk observed discrepant results for KIR3DL1 using different typing methods, and therefore, suggested that a new 3DL1 allele was present. Trachtenberg, using a MALDI-TOF/SNP assay, and our laboratory, by direct sequencing, also confirmed the presence of a novel 3DL1 sequence. This novel allele differs from 3DL1\*007 at codon 88 (CCC>GCC, Pro>Ala) (D0 domain) and at codon 166 (CTT>TTT, Leu>Phe) (D1 domain).

Therefore, the discrepancies observed with 2DS4 and 3DL1 typing of this sample could be due to the typing reagents targeted to these novel mutations.

Furthermore, Yu and Chen commented that a novel 2DL4 allele was detected. Yu reported that the new sequence was very similar to 2DL4\*006 in the tested regions of exons 3-5 and exons 7-9, with two amino acid substitutions, at codon 109 (CCG>CAG, Pro>Gln) and at codon 112 (ACG>ATG, Thr>Met).

Two laboratories reported this sample as negative for 2DL2 and one laboratory reported it as positive for 2DL3 gene.

**KIR Exchange Sample: KDNA # 0046:**

KDNA#46 was obtained from a Caucasian individual. The consensus KIR type is: 2DL2-2DL4-2DL5-3DL1-3DL2-3DL3-2DS1-2DS2-2DS3-3DP1. This genotype occurs infrequently in Caucasians (0.4-2.7%) (1,2,3). Two laboratories reported that this DNA carried 2DP1 gene. Three laboratories reported this DNA as either negative for 2DL2, or positive for 2DL1, or positive for 2DL3.

**KIR Exchange Sample: KDNA # 0047:**

KDNA#47 was derived from an African American donor. The consensus KIR type is: 2DL1-2DL2-2DL3-2DL4-2DL5-3DL1-3DL2-3DL3-2DS2-2DS3-2DS4-2DP1-3DP1. This is the second most common KIR genotype found in African populations (1,4). Two laboratories reported this DNA as negative for 2DL2 and another two laboratories reported it as negative for 2DS1. One laboratory typed this DNA as positive for 3DS1 and another typed as negative for 2DS2.

**KIR Exchange Sample: KDNA # 0048:**

The ethnic origin of this DNA donor is Hispanic. The consensus KIR type is: 2DL1-2DL2-2DL3-2DL4-2DL5-3DL1-3DL2-3DL3-3DS1-2DS1-2DS2-2DS3-2DS4-2DS5-2DP1-3DP1. This genotype carries all known KIR genes and occurs in all populations (1, 4). One laboratory reported this DNA as negative for 2DL2 and another laboratory reported it as negative for 3DS1.

**References**

1. Du, Z., Gjertson, D. W., Reed, E. F., and Rajalingam, R. (2007). Receptor-ligand analyses define minimal killer cell Ig-like receptor (KIR) in humans. *Immunogenetics* 59, 1-15.
2. Niokou, D., Spyropoulou-Vlachou, M., Darlamitsou, A., and Stavropoulos-Giokas, C. (2003). Distribution of killer cell immunoglobulin-like receptors in the Greek population. *Hum Immunol* 64, 1167-1176.
3. Toneva, M., Lepage, V., Lafay, G., Dulphy, N., Busson, M., Lester, S., Vu-Trien, A., Michaylova, A., Naumova, E., McCluskey, J., and Charron, D. (2001). Genomic diversity of natural killer cell receptor genes in three populations. *Tissue Antigens* 57, 358-362.
4. Yawata, M., Yawata, N., Abi-Rached, L., and Parham, P. (2002). Variation within the human killer cell immunoglobulin-like receptor (KIR) gene family. *Crit Rev Immunol* 22, 463-482.



























