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WOULD KIR GENOTYPING BE BENEFICIAL FOR TISSUE TYPING LABORATORIES?

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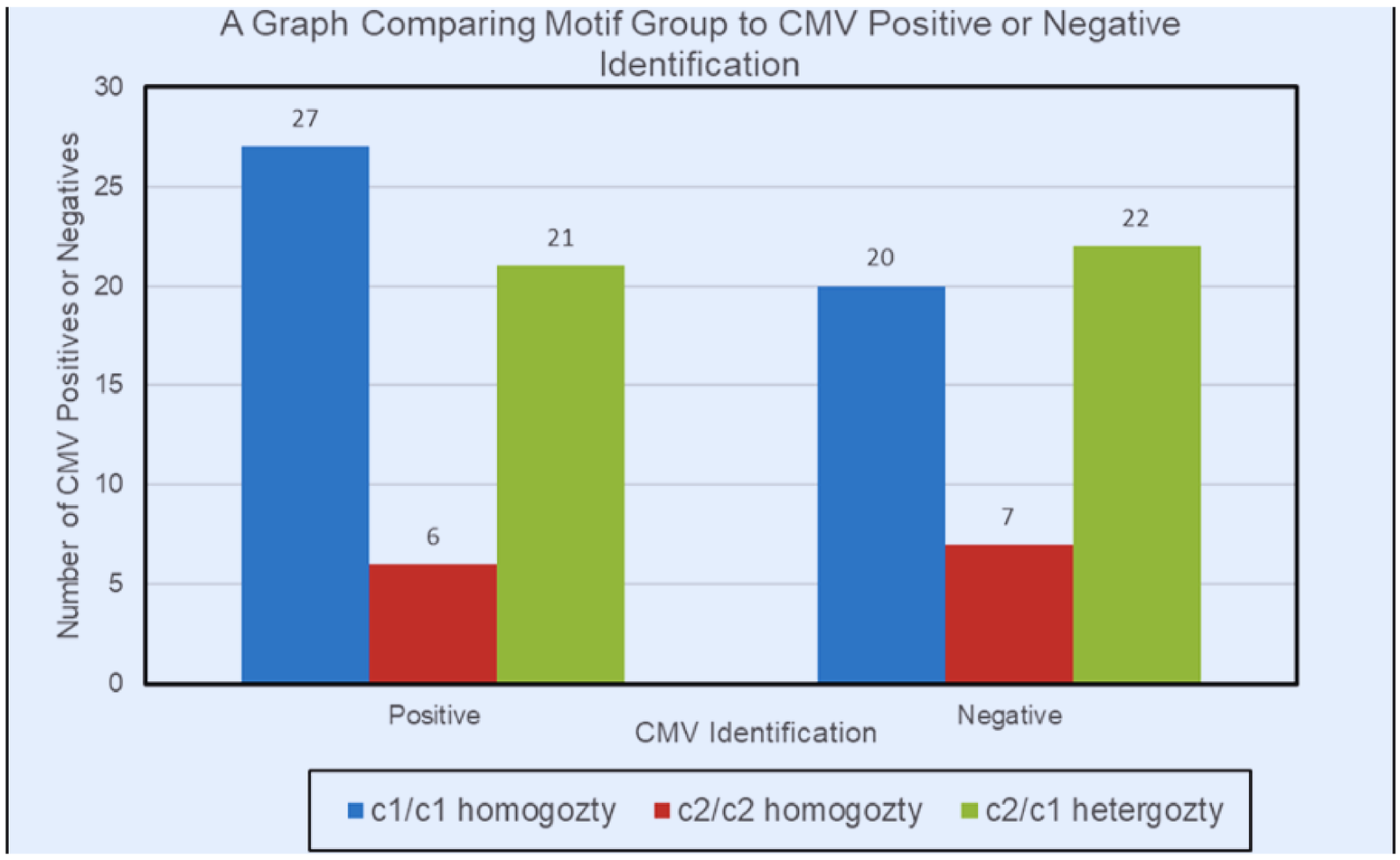
INTRODUCTION

- *Killer-cell immunoglobulin-like receptor (KIR) genes are found on human chromosome 19q13.4, and expressed on natural killer (NK) cells which interact with Human Leukocyte Antigen (HLA) class I molecules to lyse any virally infected cells (Campbell and Purdy, 2011).*

- *C2 homozygotes have a hyporesponsive gene, KIR2DS1, thus making the interaction non-responsive, which increase the chances of CMV reactivation (Sun and Lanier, 2008). My project will assess C2/C2 homozygotes in stem cell transplanted Cambridge patients in 2018, to define whether KIR genotyping is appropriate within the Cambridge tissue typing laboratory and in tandem with BSHI guidelines.*



METHOD

- *Firstly, we retrospectively collected data from 103 HSCT Cambridge patients during the year 2018. We determined whether the patients were CMV positive or CMV negative. The second objective was to group the patients into C1 and C2 groups by looking at the amino acid at position 80.*

- *Finally, I have extensively investigated different KIR genotyping kits from various companies via email, and I have formulated a business proposal regarding the most cost-effective kit available in the market.*

CONCLUSION

- *Overall, I would not recommend introducing KIR genotyping in Cambridge University's Tissue Typing Laboratory. However, if each patient has an abundance of potential donors, a shift of such magnitude will change the parameters of HSCTs and KIR genotyping could subsequently be introduced.*

- ***Recommendation:** A larger study is needed to specifically examine CMV reactivation before and after KIR genotyping, to see if there are any specific KIR genes causing CMV reactivation.*

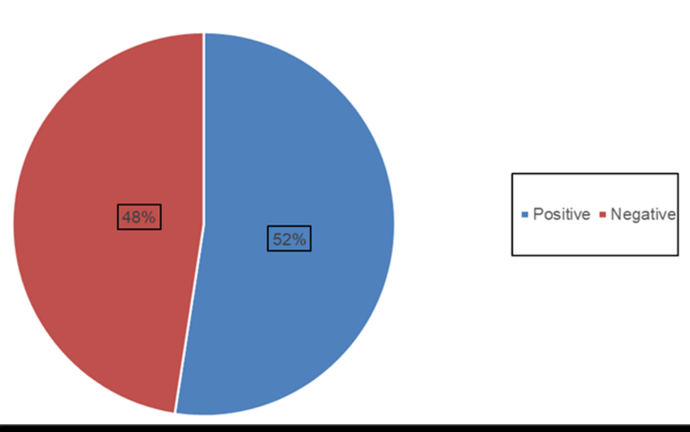
RESULTS & DISCUSSION

- *Our results depict that only 5.83% C2/C2 homozygous patients are CMV positive, and literature states that these individuals are more likely to be affected by CMV reactivation.*

- *Consequently, KIR2DS1 genotyping might not be required, implying that a larger KIR genotyping kit is unnecessary (a small SSP-PCR kit should suffice).*

- *KIR-type genes have been split into A and B haplotypes. Several studies analysing the safety of transplanting A and B haplotypes have indicated that it is safer to use B haplotypes for HSCTs (e.g. Cook et al., 2006).*

Total Number of Positives and Negatives



	Suitable genotyping kits for Cambridge University's tissue typing laboratory			
	Immucor	**One Lambda**	**CareDx**	**Miltenyi Biotec**
Technique	SSOP-PCR	SSOP-PCR	SSP-PCR	SSP-PCR
Company	Immucor	Thermofisher	CareDx	Miltenyi Biotec
UK dispatch (technical support)	Immucor	Viabio	Alpha Biotech	Miltenyi Biotec
An approximation of financial and workload costs (£) as per specialist sales representative advice for each genotyping kit	854.00	1489.00	450.00	200.00
Turnaround time (working days)	½	½	1	1