Supplemental material

Phage-phenotype imaging of myeloma plasma cells by phage display

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Results

The ELM and Blast-p tools allowed to identify short linear motifs (SliMs) in the foreign peptides, with functions previously discovered in human proteins (Table S1).

Table S1 Significant motifs in foreign peptide

Phage	SliMs	BLastp	Location
ARKMNPPAG	ARKM/ MNPP	RK-NPP	Cytosol
RRANNPSPQ	RRA / NNPSPQ	N-PSPQ/ NNP-PQ	Plasma membrane/ Cytosol
RRYTHPNNS	RRYTHP/ YTHPN	RR-YTHPN	Plasma membrane/ Cytosol
KKAHPGGSP	KKA	KKAHP	Cytosol

The ARKMNPPAG phage presented the motif "ARK" in the N-terminal, followed by a negatively charged amino acids, which resulted significant in the composition of both ARKM and MNPP SLiMs. The most represented phage in the Family 2, RRANNPSPQ and RRYTHPNNS, shared the "RR" motif. However, RRANNPSPQ showed negatively charged amino acids that take part of the other SLiM, namely "NNPSPQ". Otherwise, RRYTHPNNS showed a positively charged amino acid (histidine, H) in the middle of the sequence, which broke the succession of amino acids with negative charges and resulted important for both the two SLiMs, RRYTHP and YTHPN. Finally, KKAHPGGSP phage showed a single "KK" SliM.

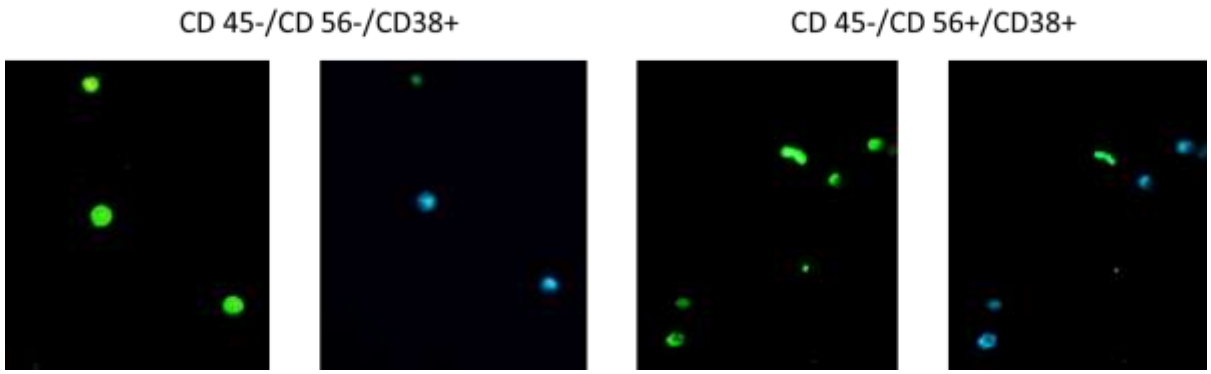

Figure S1. Ex-vivo fluorescence test of ARKMNPPAG FITC-labelled phage incubated with MM cell sorted using CD45, CD56 and CD38 gates. Green fluorescence was due to FITC-labelled phage, while blue fluorescence to DAPI nucleus staining (magnification 40x).

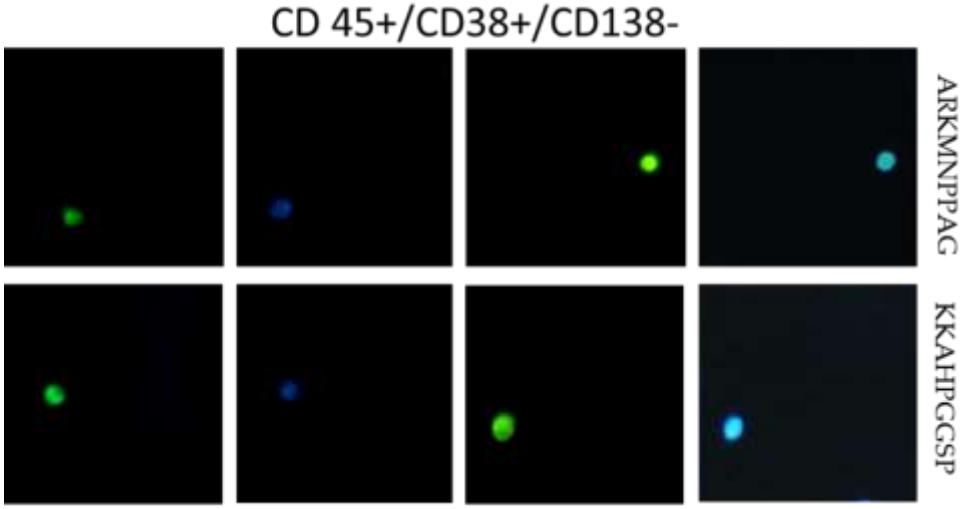

Figure S2. Ex-vivo fluorescence test of ARKMNPPAG and KKAPGGSP FITC-labelled phage incubated with CD45+/CD38+/CD138- MM cells. Green fluorescence was due to FITC-labelled phage, while blue fluorescence to DAPI nucleus staining (magnification 40x).

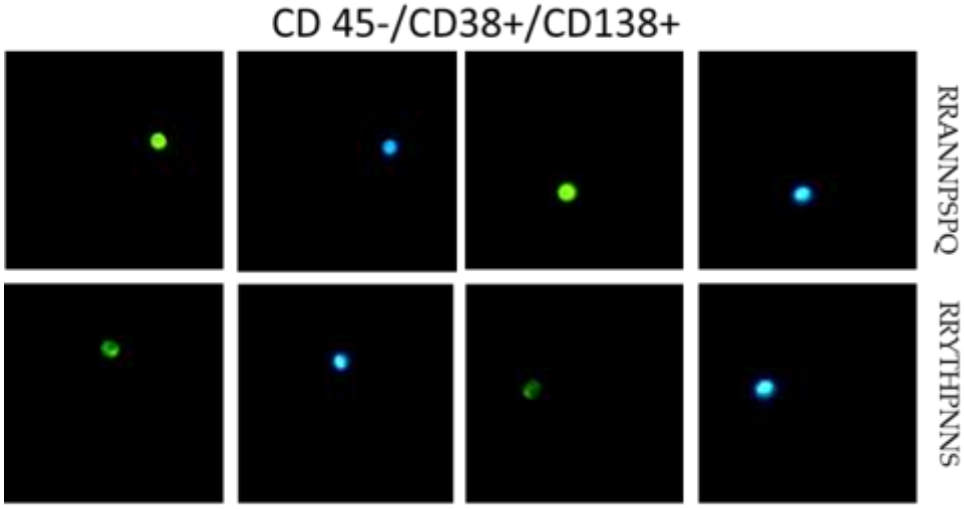

Figure S3. Ex-vivo fluorescence test of RRANNPSPQ and RRYTHPNNS FITC-labelled phage incubated with CD45-/CD38+/CD138+ MM cells. Green fluorescence was due to FITC-labelled phage, while blue fluorescence to DAPI nucleus staining (magnification 40x).