

Supplementary Information

A native IgE in complex with profilin provides insights into allergen recognition and cross-reactivity

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Unconserved 0 1 2 3 4 5 6 7 8 9 10 Conserved

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..... 10 ..... 20 ..... 30 ..... 40 ..... 50
Hevea_brasilien MSWQAYVDDH LMCEIEGNHL SAAAIIGQDG SVWAQSANFP QFKSEEITGI
Manihot_esculen MSWQAYVDDH LMCEIEGNHL SAAAIIGQDG SVWAQSSNFP QFKPEEITGI
Gossypium_austr MSWQAYVDDH LMCDIEGNHL SAAAIIGQDG SVWAQSSNFP QFKPEEISGI
Punica_granatum MSWQTYVDEH LMCDIEGNHL TSAAIIGQDG SVWAQSSSFP QFKPEEITAI
Ziziphus_jujuba MSWQTYVDDH LMCDIEGNHL SAAAIIGQDG NVWAQSP TFP QFKPEEITAI
Lotus_japonicus MSWQTYVDDH LLCEIEGNHL SSAAIIGQDG SVWAQSANFP QFKPEEITGI
Corchorus_olito MSWQAYVDDH LLCEIEGNHL TAAAIIGHDG SVWAQSSNFP QFKPEEITGI
Jatropha_curcas MSWQTYVDEH LMCEIEGNHL SAAAIIGQDG SVWAQSS TFP QFKPEEITAI
Herrania_umbrat MSWQAYVDDH LMCEIEGNHL SAAAIIGQDG SVWAQSSNFP QFKPEEINGI
Cannabis_sativa MSWQAYVDDH LMCEIDGNHL TAAAIIGHDG SVWAQSANFP QFKPEEITGI
Quercuslobata MSWQTYVDDH LMCEIEGNHL AAAAIIGHDG SVWAQSS TFP QFKPEEITGI
Quercus_suber MSWQTYVDDH LMCEIEGNHL AAAAIIGHDG SVWAQSS TFP QFKPEEITGI
Arachis_hypogae MSWQTYVDDH LLCEIEGNHL SSAAIIGQDG SVWAQSSNFP QFKPEEITAI
Vigna_unguicula MSWQVYVDDH LLCEIEGNHL THAAIIGHDG SVWAQSSSFP QFKPEEITGI
Citrus_clementi MSWQAYVDDH LLCEIEGNHL SAAAIIGHDG SVWAQSENFP QFKPEEITGI
Morella_rubra MSWQTYVDEH LMCEIEGNHL SAAAIIGQDG SVWAQSATFP QFKPEEITGI
Consistency ***6***8* *8*8*9*** 77***9*6** 9*****76** *9*9***87*

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..... 60 ..... 70 ..... 80 ..... 90 ..... 100
Hevea_brasilien MSDFHEPRTL APTGLYIGGT KYMVIQGEPP AVIRGKKKGGP GVTVKKTNQA
Manihot_esculen MNDFAEPRTL APTGLYLGGT KYMVIQGEPP AVIRGKKKGGP GVTVKKTNQA
Gossypium_austr MNDFAEPGSL APTGLYLGGT KYMVIQGEPP AVIRGKKKGGP GVTVKKTNQA
Punica_granatum MNDFTEPRTL APTGLFLGGT KYMVIQGEPP AVIRGKKKGGP GVTVKKTNQA
Ziziphus_jujuba VNDFAEPRTL APTGLYLGGT KYMVIQGEPP AVIRGKKKGGP GVTVKKTNQA
Lotus_japonicus MNDFAEPGSL APTGLYLGGT KYMVIQGEPP AVIRGKKKGGP GVTVKKTNQA
Corchorus_olito MNDFNEPRTL APTGLYLGGT KYMVIQGEPP AVIRGKKKGGP GVTVKKTSAA
Jatropha_curcas MNDFNEPRTL APTGLYLGGT KYMVIQGEPP AVIRGKKKGGP GVTVKKTNQA
Herrania_umbrat MNDFAEPGSL APTGLYLGGT KYMVIQGEPP AVIRGKKKGGP GVTVKKTNQA
Cannabis_sativa MNDFEERPRTL APTGLYLGGT KYMVIQGEPP AVIRGKKKGGP GVTVKKTSQA
Quercuslobata MNDFAEPGSL APTGLYLGGT KYMVIQGEPP AVIRGKKKGGP GVTVKKTSQA
Quercus_suber MNDFAEPGSL APTGLYLGGT KYMVIQGEPP AVIRGKKKGGP GVTIKKTSQA
Arachis_hypogae MNDFAEPGSL APTGLYLGGT KYMVIQGEPP AVIRGKKKGGP GVTIKKTNQA
Vigna_unguicula MNDFNEPRTL APTGLYIGGT KYMVIQGEPP AVIRGKKKGGP GVTVKKTNLA
Citrus_clementi MNDFNEPRTL APTGLYLGGT KYMVIQGEPP AVIRGKKKGGP GVTIKKTSAA
Morella_rubra MNDFAEPGSL APTGLYLGGT KYMVIQGEPP AVIRGKKKGGP GVTVKKTNQA
Consistency 99**5***7* *****99*** ***** 9* ***9***77*

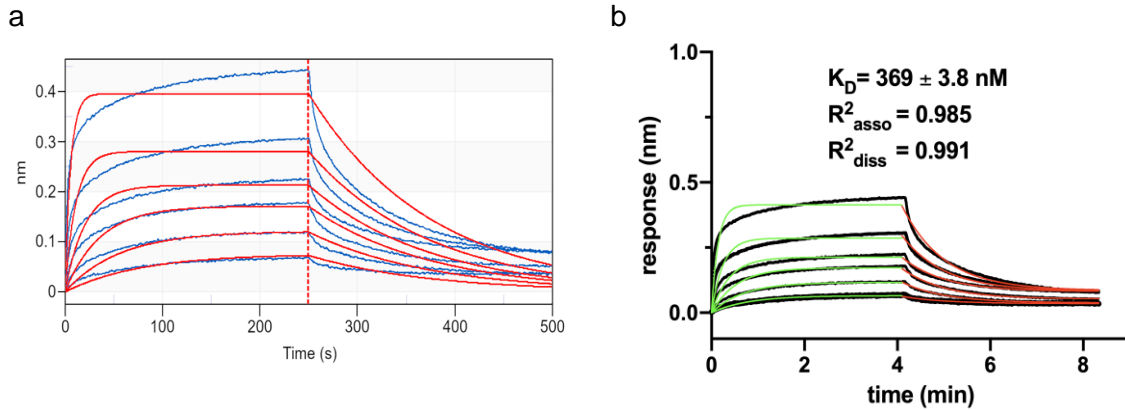
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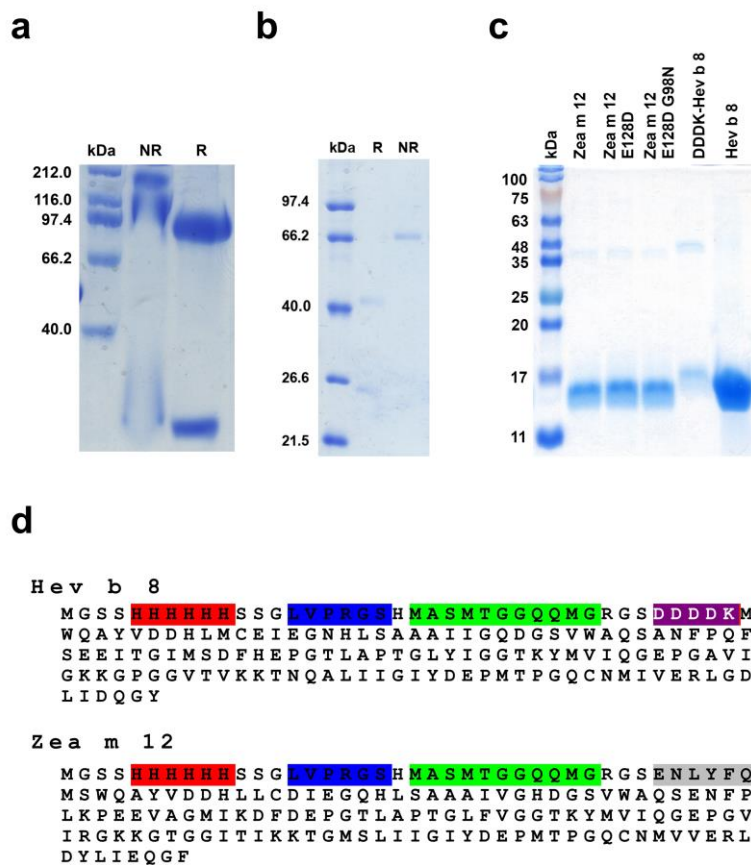
..... 110..... 120..... 130.
Hevea_brasilien LIIGIYDEPM TPGQCNMIVE RLG DY LIDQG Y
Manihot_esculen LIIGIYDEPM APGQCNMIVE RLG DY LIDQG L
Gossypium_austr LIIGIYDEPM TPGQCNMIVE RLG DY LIDQG L
Punica_granatum LIIGIYDEPM TPGQCNMIVE RLG DY LIDQG L
Ziziphus_jujuba LIIGIYDEPM TPGQCNMIVE RLG DY LIDQG L
Lotus_japonicus LIIGIYDEPM TPGQCNMIVE RLG DY LIDQG L
Corchorus_olito LIIGIYDEPM TPGQCNMIVE RLG DY LIDQG L
Jatropha_curcas LIIGIYDEPM TPGQCNMIVE RLG DY LIDQG L
Herrania_umbrat LIIGIYDEPM TPGQCNMIVE RLG DY LVDQG L
Cannabis_sativa LIIGVYDEPM TPGQCNMIVE RLG DY LVDQG L
Quercuslobata LIIGIYDEPM TPGQCNMIVE RLG DY LIDQG L
Quercus_suber LIIGIYDEPM TPGQCNMIVE RLG DY LIDQG L
Arachis_hypogae LIIGIYDEPM TPGQCNMIVE RLG DY LIDTG L
Vigna_unguicula LVIGIYDEPM TPGQCNMIVE RLG DY LIDQG L
Citrus_clementi LIIGIYDEPM TPGQCNMIVE RLG DY LIDQG L
Morella_rubra LIIGIYDEPM TPGQCNMIVE RLG DY LIDQG L
Consistency *9**9***** 9***** *****9*9* 9

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Supplementary Fig. 1. Sequence alignment of profilins that could cross-react with Hev b 8. Sequence alignment 15 was performed using the PRALINE server³⁷.



Supplementary Fig. 2. BLI adjustments for the Fab/IgE 2F5 with rHev b 8. a) BLI fitting using a 1:1 model as implemented in the BLI OCTECT software, with a 1:1 global fitting b) BLI fitting using GRAPHPAD PRISMA 8 considering NSB=0.



Supplementary Fig. 3. SDS-PAGE under reducing conditions shows the heavy and light chains. a) Purified IgE 2F5; b) Purified Fab/IgE 2F5 under reducing conditions (R) and non-reducing conditions (NR). c) Purified profilins. d) rHev b 8 and rZea m 12 whole constructions that contain at the N-terminal region a Histidine tag (red), a Thrombin cleavage site (blue), a T7 tag (green), an enterokinase cleavage site (purple in Hev b 8), and a TEV site (gray in Zea m 12).