Supplemental Figure and Movie Legends

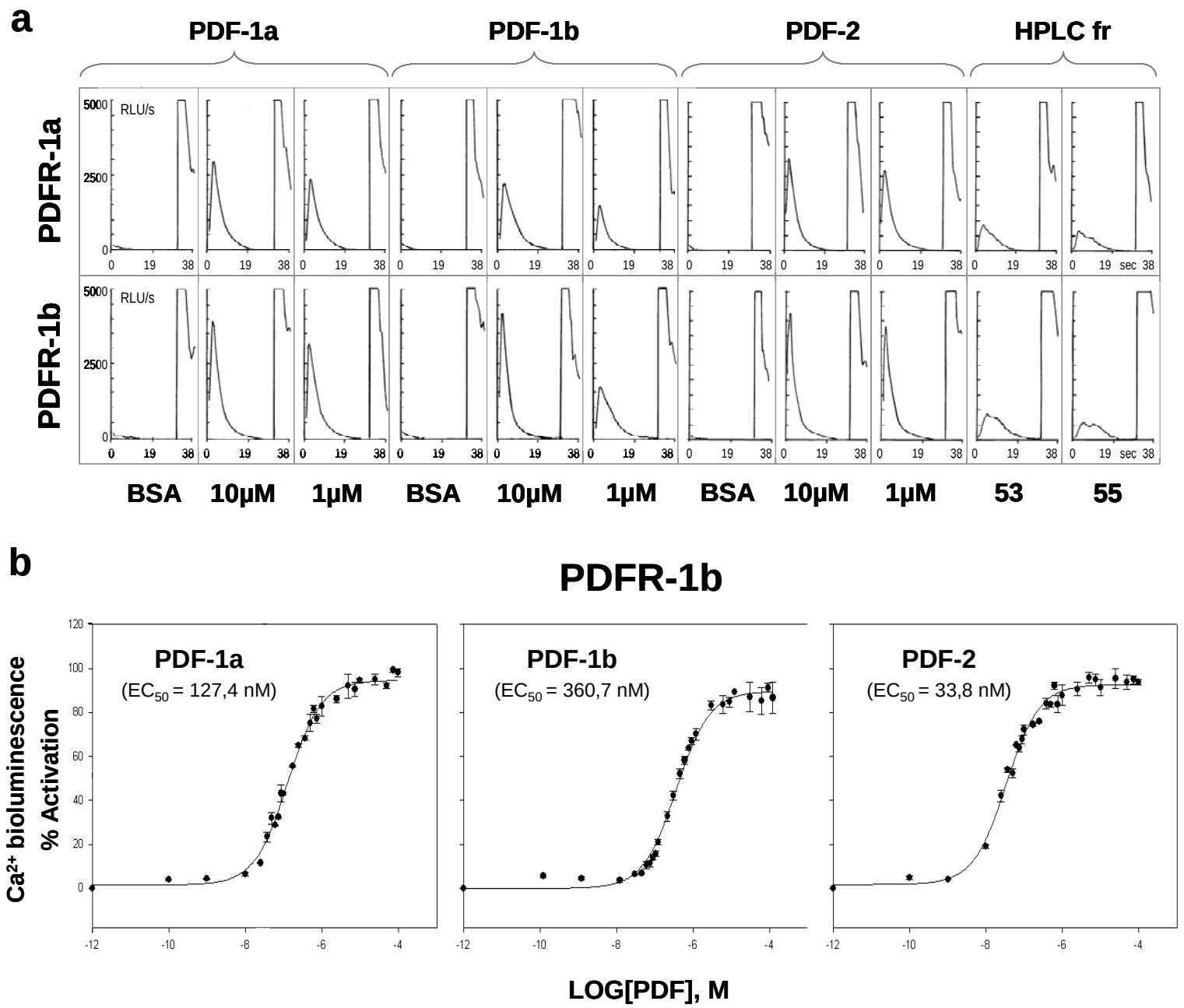
Supplemental Figure 1 (**a**) The Ca^{2+} bioluminescence (RLU/s) of cells expressing *Ce*_PDFR-1a or b, measured for 30 seconds following the addition of 10 μM or 1 μM of synthetic peptides PDF-1a, PDF-1b or PDF-2, or reversed phase HPLC fractions 53 or 55 (1/20) from *C. elegans* whole body peptide extracts. After 30 seconds, Triton X-100 (0.1%) was added to measure the maximum remaining Ca^{2+} response of the cells. BSA medium was used as a negative control. (**b**) Dose-response curves for PDF-1a, PDF-1b and PDF-2 on receptor PDFR-1b, as measured with the Ca^{2+} bioluminescence assay.

Supplemental Figure 2 Gene structure of differentially spliced gene C13B9.4 (*pdfr-1*) with the exons of splice isoforms *pdfr-1a*, *b* and *c* indicated in blue.

Supplemental Movie 1 3-D movie created from confocal Z-stack projections of transgenic N2 wild-type worms expressing GFP under the control of the promoter sequence from *pdfr-1* (L1 hermaphrodite).

Supplemental Movie 2 3-D movie created from confocal Z-stack projections of transgenic N2 wild-type worms expressing GFP under the control of the promoter sequence from *pdfr-1* (adult **male** head).

Supplemental Movie 3 3-D movie created from confocal Z-stack projections of transgenic N2 wild-type worms expressing GFP under the control of the promoter sequence from *pdfr-1* (adult **male** tail).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PDF-1a
PDF-1b
PDF-2
HPLC fr
PDFR-1a
PDFR-1b
RLU/s
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2500
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0 19 sec 38
BSA
10μM
1μM
BSA
10μM
1μM
BSA
10μM
1μM
53
55
b
PDFR-1b
Ca2+ bioluminescence
% Activation
PDF-1a
(EC50 = 127,4 nM)
PDF-1b
(EC50 = 360,7 nM)
PDF-2
(EC50 = 33,8 nM)
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100
80
60
40
20
0
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-10
-8
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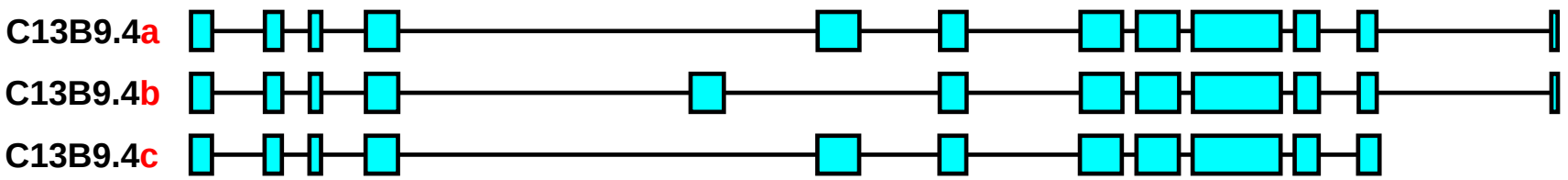
-4
LOG[PDF], M


C13B9.4a
C13B9.4b
C13B9.4c