

SUPPLEMENTARY MATERIALS FOR

Bat-specific adaptations in interferon signaling and GBP1 contribute to enhanced antiviral capacity

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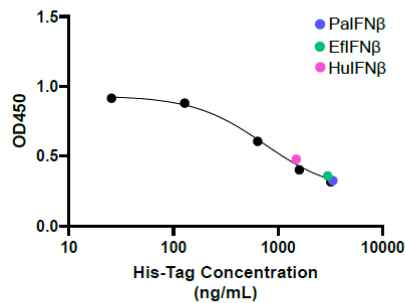
The supplement contains: Supplementary Figures 1 to 18.

Supplementary Data 1 to 7 are provided as a separate Excel file.

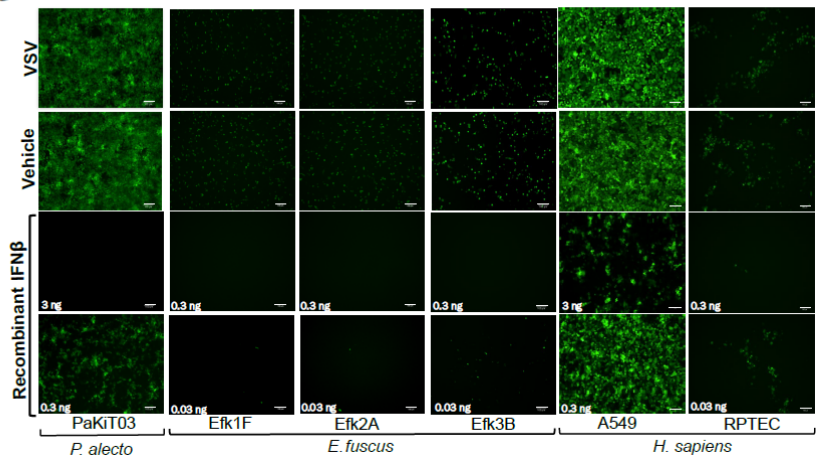
A

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Pteropus alecto	1	ATGACCAACAGGTGCTCCTCCAAATTTGCTCTCCTGTTGTGTTTCTCCACCACAGCTCTTTCCATGAGCTACAACCTTGCT	80
Eptesicus fuscus	1	ATGACCAACAGGTGCTCCTCCAGCTCAGCGTCTGCTGAGCTTACAGGCTGCTCTCCGTTGAATACAGGCTTGCT	80
Homo sapiens	81	TGGATTCTTACAAAGAAGCAGCAATTTTCACTGTCTAAGAGCTCTCTGTGGCAATTGAATGGAGGCTTGAATACATGCCTCA	160
Pteropus alecto	81	TCGATTCTTACAAAGAAGCAGCAATTTAGCCTGCTCTGAAGCTCTCTGTGGCAGTTAATGGAACTCCTCAATATTGCCACA	160
Eptesicus fuscus	81	CCGATTCTGACAGAGAAGCAGCAATTCAGCCTGTCTGGAGCTCCTGCGGAGCTTGATTAGAAGCCTCAGAAATTGCTGG	160
Homo sapiens	161	AGGACAGGATGAACCTTTGACATCCCTGAGGAGATTAAGCAGCTGCAGCAGTTCCAGAAGGAGGACCCGCATTGATCATC	240
Pteropus alecto	161	AGGACAGGATGGACTTCAAGCTCCCTGCGGAGATTAAACAACACAGCAGTTCCAGAAGGAGGATACCGTATTGATCATC	240
Eptesicus fuscus	161	GTGACACGATGGACTTCCAGATCCCAAGGAGTTAAACAGCCACAGCAGTTCCAGAAGGAGGATCCGATGGTGTCTATG	240
Homo sapiens	241	TATGAGATGCTCCAGATCATCTTTGCTATTTTTCAGACAGATTCACTAGCACTGGCTGGAATGAGACTATTGTTGAGAA	320
Pteropus alecto	241	CATGAGATGCTCCGGCAGATCTTTGATATTTTCCAAAGAAATTTCTCTAGCACTGGCTGGAATGAACCATCATATGAA	320
Eptesicus fuscus	241	CATGAGATGTTCCATCAGATCTTCACTATTTCCGAAGAAGTTTCTCAGCACCGGCTGGAATGAGACCATCGTTGAGAA	320
Homo sapiens	321	CCTCCTGGCTAATGTCTATCATCAGATAAACCACTGTAAGACAGTCTCTGGAAAGAAAACCTGGAGAAAGAAATTCACCA	400
Pteropus alecto	321	TCTCTCTGAGACACTCGGTGGCAGATGGACCGTCTGGAGACAGCTATGGAGGAAA---TGGAGAAAGAAAACCTCACCT	397
Eptesicus fuscus	321	CCTCTCTGGAGGCTCATTGGCAGATGGACCGCTGGAGACAGCCCTGAAGAAACCATGACGAGGAAAGTTCCCT	400
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Pteropus alecto	398	GGGAAAAG---CATGACAGTGTGCACTCTAGAGAATTATTACTTTAGGATCATAGGTACCTGGACACCAAGTTTACAGC	474
Eptesicus fuscus	401	GGGAAAAG---CAGGACCGTGTCTGCGCTGAAGACCTACTACTTAGGCTATCTTACAGTACCTGAAGGCCAAGCTTACAGC	477
Homo sapiens	481	CACGTGTGCTGGACATAGTCAGAGTGGAAATCTTAAGGAACCTTTACTTCAATTAAACAGACTTACAGGTACCTCCGAAA	560
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Eptesicus fuscus	478	CAATGTGCTGGACTGTCTCAAGTGGAAATCCTCAGGAACCTTCTCTCTTAATGGACTCTATAGATGCCCTCCAGGA	557
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Pteropus alecto	555	CTGA	558
Eptesicus fuscus	558	CTGA	561

B

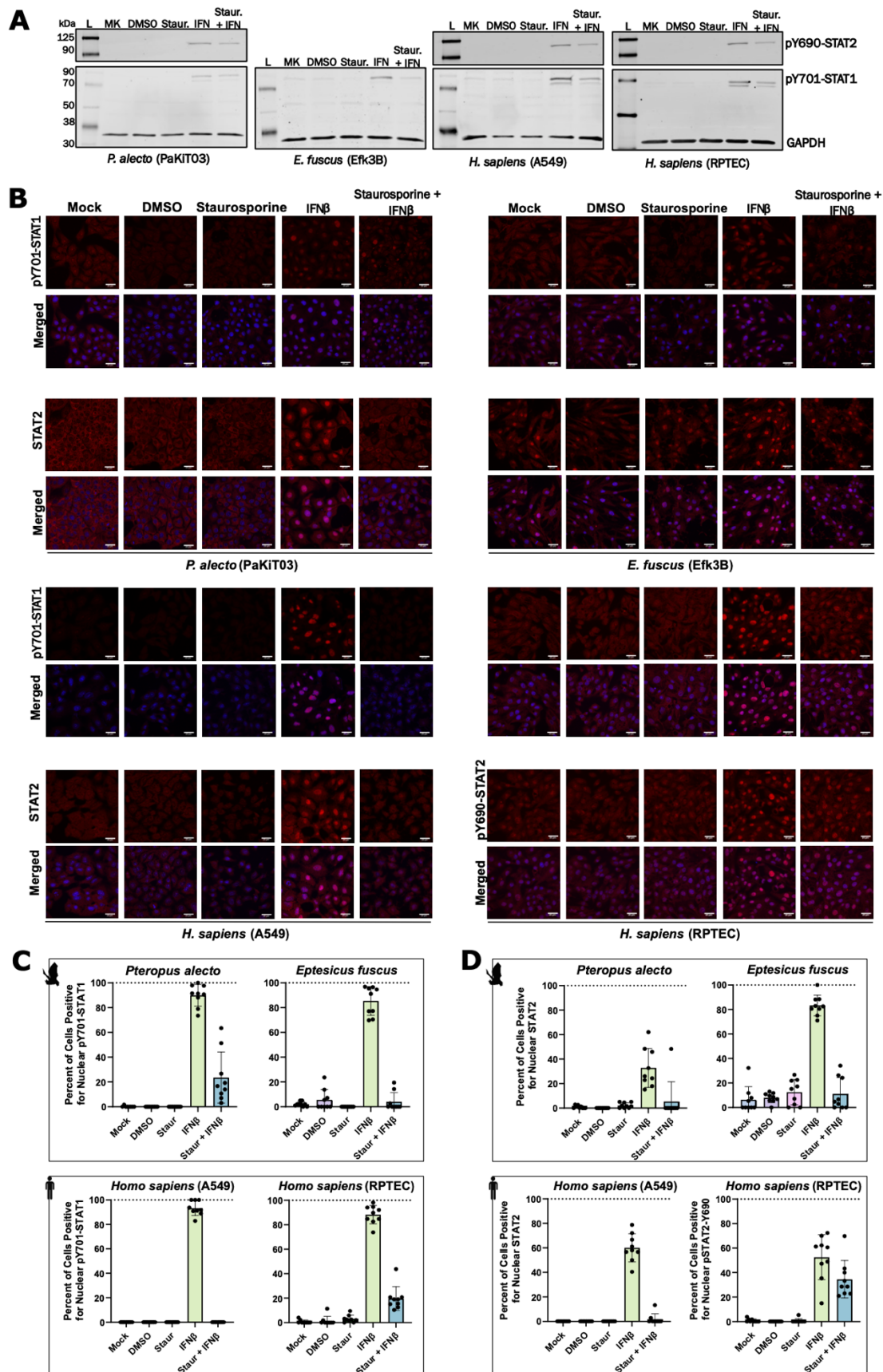


C

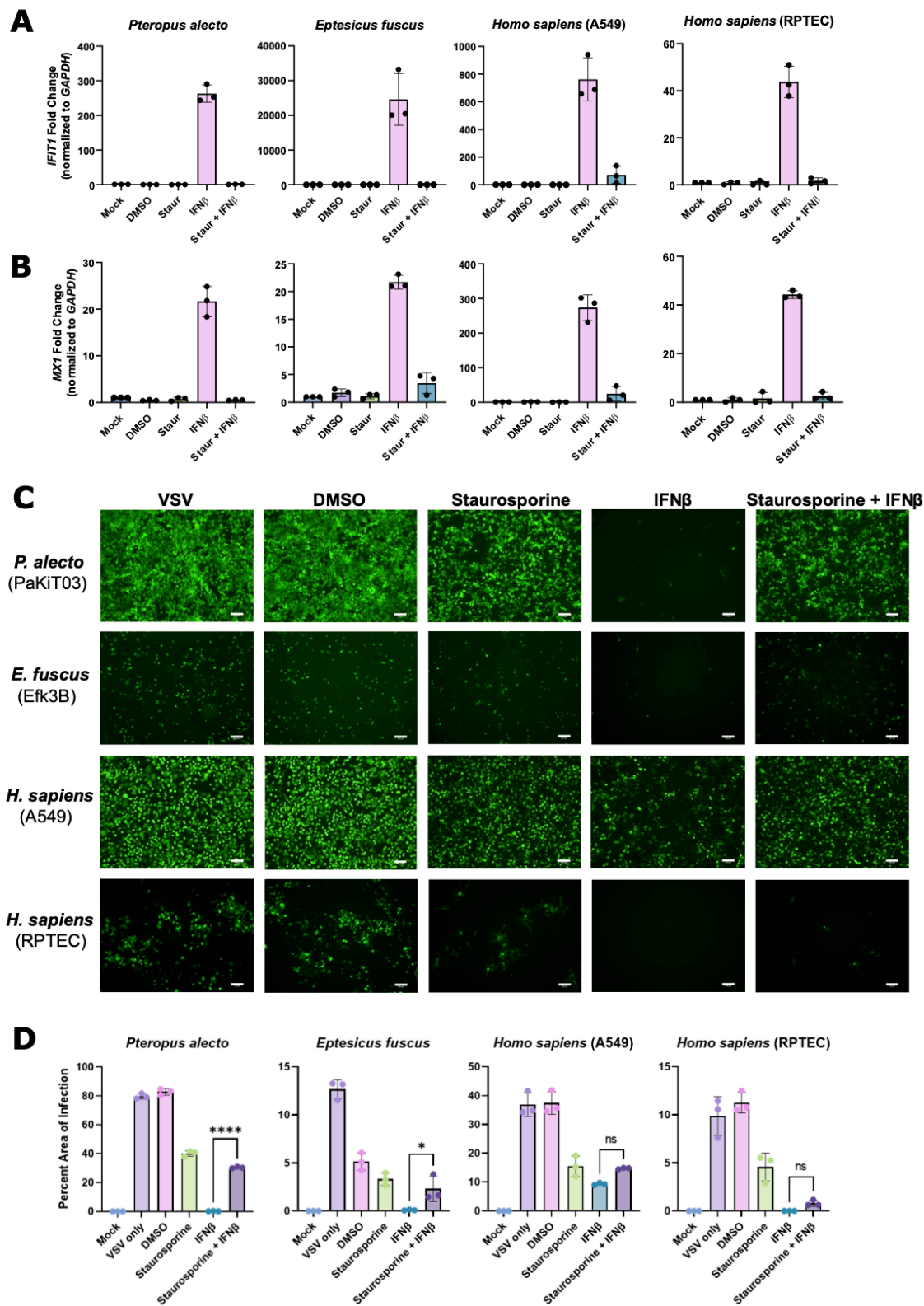


Supplementary Figure 1. Generation of functional IFN β . (A) ClustalW alignment of IFN β from humans, *P. alecto*, and *E. fuscus*. Grey boxes indicate identical residues. Alignment was generated using MacVector software. (B) Stock concentrations for IFN β expressing a 6x-His tag for *P. alecto*, *E. fuscus* and humans were determined by a competitive ELISA. Black dots represent standards included in the commercial ELISA. (C) *P. alecto* (PaKit03), *E. fuscus* (Ef1F, Ef2A, Ef3B), and human A549 and life-extended RPTEC cells were treated with the vehicle control or with serially diluted, species-matched IFN β for 6 hours prior to infection with VSV-GFP (MOI 0.1). Infection levels were assessed 16 hours post infection using fluorescent microscopy. The last

dilution where 100% protection was observed was selected as 1 unit (i.e. 1U) of IFN β for each species. Scale bars = 100 μ M. Image is representative of 3 replicates.

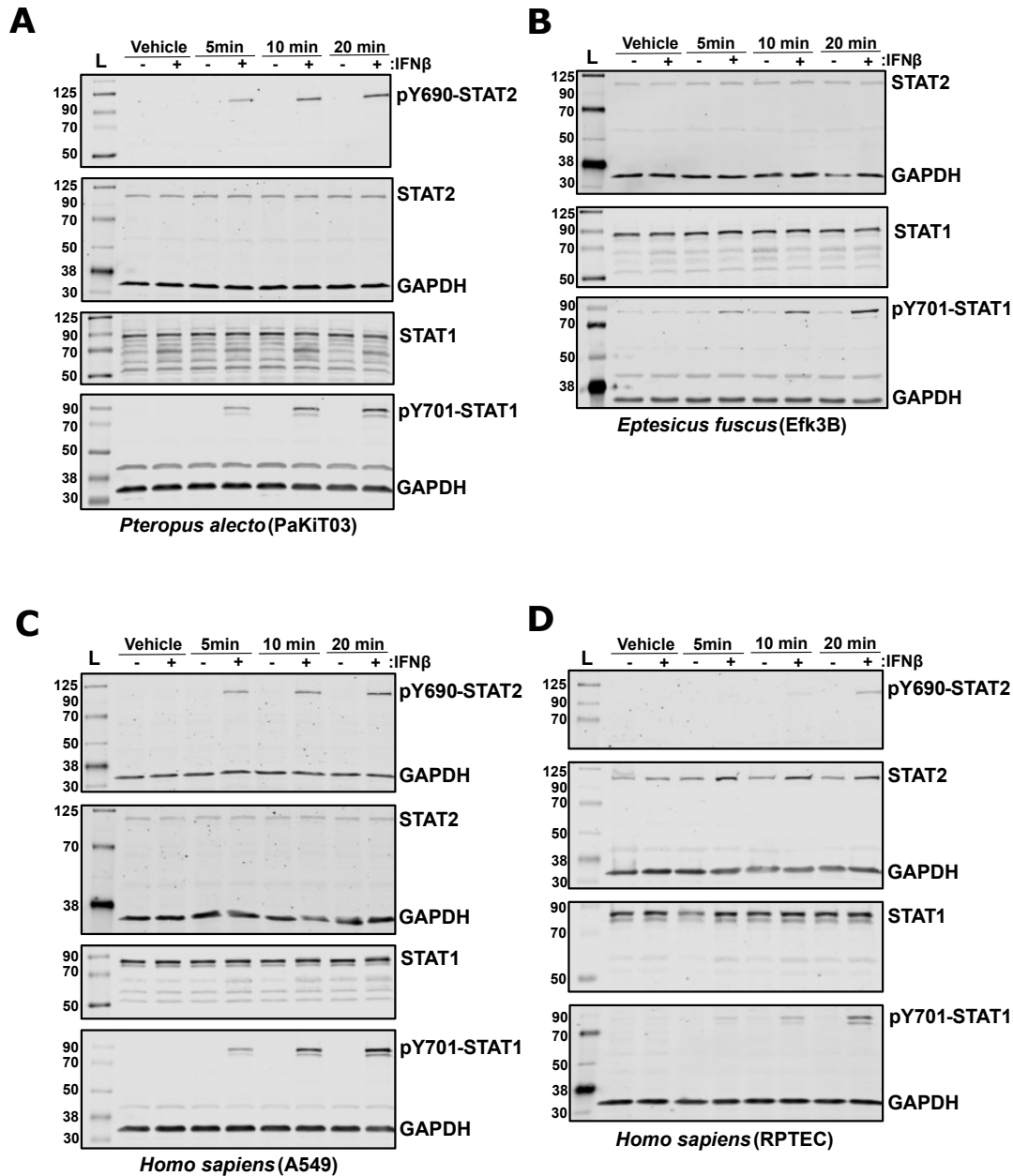


Supplementary Figure 2. Phosphorylation of STAT1 and STAT2 during bat IFN β signaling. *P. alecto* (PaKiT03), *E. fuscus* (EfK3B), and human (A549, RPTEC) cells were treated with Staurosporine (Staur; 500nM), species-matched IFN β (10 U/mL), or treated with both Staurosporine and IFN β for 4 hours. **(A)** Protein lysates from cells were harvested to evaluate the phosphorylation of STAT1 (pY701-STAT1) and STAT2 (pY690-STAT2). GAPDH was used as a loading control. Lane “L” represents molecular weight ladder (kDa). Immunoblots are representative of three replicates. **(B)** Cells were fixed in 100% methanol and stained for pY701-STAT1, pY690-STAT2, STAT2, and/or DAPI. Nuclear translocation was visualized by confocal microscopy. Scale bars = 25 μ M. Image is representative of 3 replicates. Quantification pY701-STAT1 **(C)** and total STAT2 or pY690-STAT2 **(D)** nuclear localization using ImageJ. Data are represented as mean $\pm$ SD, n=3 where 3 fields of view were taken per replicate. Bat and human icons used in panels C and D were obtained from BioRender [<https://BioRender.com/o9oes1x>].



Supplementary Figure 3. Phosphorylation is required for IFN β -induced antiviral response. *P. alecto* (PaKiT03), *E. fuscus* (EfK3B), and human (A549, RPTEC) cells were

treated with Staurosporine (Staur; 500nM), species-matched IFN β (10 U/mL), or treated with both Staurosporine and IFN β for 4 hours. qRT-PCR was performed to evaluate the upregulation of *IFIT1* (**A**) and *MX1* (**B**) transcripts. Data are represented as mean $\pm$ SD, n=3 biological replicates. (**C**) Following 4 hours of Staurosporine and/or IFN β treatment, cells were infected with VSV-GFP (MOI 0.1) for 16 hours. Viral replication was visualized using fluorescent microscopy, and (**D**) GFP signal was quantified using ImageJ to determine percent area of infection. Data are represented as mean $\pm$ SD, n=3 replicates (Ordinary One-way ANOVA, **** <0.0001, * <0.05).



Supplementary Figure 4. Full immunoblots for STAT1 and STAT2 phosphorylation. PaKiT03 (A), Efk3B (B), A549 (C), and RPTEC (D) cells were treated with vehicle or species matched IFN β (10 U/mL) for 5, 10, and 20 minutes. Total STAT1, STAT2, and phosphorylated STAT1 (pY701-STAT1) and STAT2 (pY690-STAT2) were assessed by immunoblotting. GAPDH was used as a loading control. Lane “L” represents molecular weight ladder (kDa). Immunoblots are representative of three replicates and are the full blots for that of **Figure 2A**.

P. alecto	1	MAQWEMLNQNDSPFQDQLHQLYTNSSLLPVDIRQYLAVWIEDQNWQEAALGKDDSKANMLFFHFLDQLKYECCGRCSQDPEC	80
P. giganteus	1	MAQWEMLNQNDSPFQDQLHQLYTNSSLLPVDIRQYLAVWIEDQNWQEAALGKDDSKANMLFFHFLDQLKYECCGRCSQDPEC	80
P. vampyrus	1	MAQWEMLNQNDSPFQDQLHQLYTNSSLLPVDIRQYLAVWIEDQNWQEAALGKDDSKANMLFFHFLDQLKYECCGRCSQDPEC	80
P. rodricensis	1	MAQWEMLNQNDSPFQDQLHQLYTNSSLLPVDIRQYLAVWIEDQNWQEAALGKDDSKANMLFFHFLDQLKYECCGRCSQDPEC	80
R. aegyptiacus	1	MAQWEMLNQNDSPFQDQLHQLYTNSSLLPVDIRQYLAVWIEDQNWQEAALGNDSSKANMLFFHFLDQLKYECCGRCSQDPEC	80
R. ferrumequinum	1	MAQWEMLNQNDSPFQDQLHQLYTNSSLLPVDIRQYLAVWIEDQNWQEAALGNDSSKANMLFFHFLDQLKYECCGRCSQDPEC	80
S. hondurensis	1	MAQWEMLNQNDSPFQDQLHQLYTNSSLLPMDIRQYLAVWIEDQNWQEAALGNNSSQANMLFLHFSQDQNYECARCSQDPEC	80
A. jamaicensis	1	MAQWEMLNQNDSPFQDQLHQLYTNSSLLPMDIRQYLAVWIEDQNWQEAALGNNSSQANMLFLHFSQDQNYECARCSQDPEC	80
P. discolor	1	MAQWEMLNQNDSPFQDQLHQLYTNSSLLPMDIRQYLAVWIEDQNWQEAALRN-SYQANMLFLHFSQDQNYECARCSQDPEC	79
P. hasatus	1	MAQWEMLNQNDSPFQDQLHQLYTNSSLLPMDIRQYLAVWIEDQNWQEAALRN-SYQANMLFLHFSQDQNYECARCSQDPEC	79
D. rotundus	1	MAQWEMLNQNDSPFQDQLHQLYTNSSLLPMDIRQYLAVWIEDQNWQEAALGNNSSQANMLFLHFLDQNYECARCSQDPEC	80
E. fuscus	1	MAQWEMLNQNDSPFQDQLHQLYTNSSLLPVDIRQYLAVWIEDQNWQEAALGSDNSQANMLCFHFLDQNYECARCSQDPEC	80
H. armiger	1	MAQWEMLNQNDSPFQDQLHQLYTNSSLLPVDIRQYLAVWIEDQNWQEAALGSDSSKANMLFFHFLDQNYECGRCSQDPEC	80
M. molossus	1	MAQWEMLNQNDSPFQDQLHQLYTNSSLLPVDIRQYLAVWIEDQNWQEAALGSDNSQANMLYLFHFLDQNYECARCSQDPEC	80
M. natalensis	1	MAQWEMLNQNDSPFQDQLHQLYTNSSLLPMDIRQYLAVWIEDQNWQEAALGNDSSQANMLFFHFLDQNYECGRCSQDPEC	80
M. brandtii	1	MAQWEMLNQNDSPFQDQLHQLYTNSSLLPVDIRQYLAVWIEDQNWQEAALGNDSSQANMLCFHFVQDQNYECARCSQDPEC	80
M. lucifugus	1	MAQWEMLNQNDSPFQDQLHQLYTNSSLLPVDIRQYLAVWIEDQNWQEAALGNDSSQANMLCFHFVQDQNYECARCSQDPEC	80
M. myotis	1	MAQWEMLNQNDSPFQDQLHQLYTNSSLLPVDIRQYLAVWIEDQNWQEAALGNDSSQANMLCFHFVQDQNYECARCSQDPEC	80
M. davidii	1	MAQWEMLNQNDSPFQDQLHQLYTNSSLLPVDIRQYLAVWIEDQNWQEAALGNDSSQANMLCFHFVQDQNYECARCSQDPEC	80
P. kuhlii	1	MAQWEMLNQNDSPFQDQLHQLYTNSSLLPVDIRQYLAVWIEDQNWQEAALGNDSSQANMLCFHFVQDQNYECARCSQDPEC	80
H. sapiens	1	MAQWEMLNQNDSPFQDQLHQLYTNSSLLPVDIRQYLAVWIEDQNWQEAALGSDSSKANMLFFHFLDQNYECGRCSQDPEC	80

P. alecto	81	LLQHNLRKFCRDIQAFPPQGPQLAEMIFNLLLEEKRILIAQRAQLLEQGEVPVEVPVESQQ-PEIESRILELRVMMMEKL	159
P. giganteus	81	LLQHNLRKFCRDIQAFPPQGPQLAEMIFNLLLEEKRILIAQRAQLLEQGEVPVEVPVESQQ-PEIESRILELRVMMMEKL	159
P. vampyrus	81	LLQHNLRKFCRDIQAFPPQGPQLAEMIFNLLLEEKRILIAQRAQLLEQGEVPVEVPVESQQ-PEIESRILELRVMMMEKL	159
P. rodricensis	81	LLQHNLRKFCRDIQAFPPQGPQLAEMIFNLLLEEKRILIAQRAQLLEQGEVPVEVPVESQQ-PEIESRILELRVMMMEKL	159
R. aegyptiacus	81	LLQHNLRKFCRDIQAFPPQGPQLAEMIFNLLLEEKRILIAQRAQLLEQGEPALEVPVESQQ-PEIESRILELRVMMMEKL	159
R. ferrumequinum	81	LLQHNLRKFCRDIQAFPPQGPQLAEMIFNLLLEEKRILIAQRAQLLEQGEPALEAPVESQQHEIESRILELRAMMEKL	160
S. hondurensis	81	LLQHNLRKFCRDIQAFPPGPIQLAEMIFNLLLEEKRILIAQRAQVEQEEPDLPAPVESQQ-HEIESRILELRAMMEKL	159
A. jamaicensis	81	LLQHNLRKFCRDIQAFPPGPIQLAEMIFNLLLEEKRILIAQRAQVEQEEPDLPAPVESQQ-HEIESRILELRAMMEKL	159
P. discolor	80	LLQHNLRKFCRDIQAFPPGPIQLAEMIFNLLLEEKRILIAQRAQVEQEEPDLPAPVESQQ-HEIESRILELRAMMEKL	158
P. hasatus	80	LLQHNLRKFCRDIQAFPPGPIQLAEMIFNLLLEEKRILIAQRAQVEQEEPDLPAPVESQQ-HEIESRILELRAMMEKL	158
D. rotundus	81	LLQHNLRKFCRDIQAFPPGPIQLAEMIFNLLLEEKRILIAQRAQVEQEEPDLPAPVESQQ-HEIESRILELRAMMEKL	159
E. fuscus	81	LLQHNLRKFCRDIQAFPPGPIQLAEMIFNLLLEEKRILIAQRAQVEQEEPALEAPVESQQ-HEIESRILELRAMMEKL	159
H. armiger	81	LLQHNLRKFCRDIQAFPPGPIQLAEMIFNLLLEEKRILIAQRAQVEQEEPALEAPVESQQ-HEIESRILELRAMMEKL	159
M. molossus	81	LLQHNLRKFCRDIQAFPPGPIQLAEMIFNLLLEEKRILIAQRAQVEQEEPALEAPVESQQ-HEIESRILELRAMMEKL	159
M. natalensis	81	LLQHNLRKFCRDIQAFPPGPIQLAEMIFNLLLEEKRILIAQRAQVEQEEPALEAPVESQQ-HEIESRILELRAMMEKL	159
M. brandtii	81	LLQHNLRKFCRDIQAFPPGPIQLAEMIFNLLLEEKRILIAQRAQVEQEEPALEAPVESQQ-HEIESRILELRAMMEKL	159
M. lucifugus	81	LLQHNLRKFCRDIQAFPPGPIQLAEMIFNLLLEEKRILIAQRAQVEQEEPALEAPVESQQ-HEIESRILELRAMMEKL	159
M. myotis	81	LLQHNLRKFCRDIQAFPPGPIQLAEMIFNLLLEEKRILIAQRAQVEQEEPALEAPVESQQ-HEIESRILELRAMMEKL	159
M. davidii	81	LLQHNLRKFCRDIQAFPPGPIQLAEMIFNLLLEEKRILIAQRAQVEQEEPALEAPVESQQ-HEIESRILELRAMMEKL	159
P. kuhlii	81	LLQHNLRKFCRDIQAFPPGPIQLAEMIFNLLLEEKRILIAQRAQVEQEEPALEAPVESQQ-HEIESRILELRAMMEKL	159
H. sapiens	81	LLQHNLRKFCRDIQAFPPGPIQLAEMIFNLLLEEKRILIAQRAQLLEQGEVPVEVPVESQQ-HEIESRILELRAMMEKL	159

P. alecto	160	VKSISQLKDQDVFVCFRYKTS--VRTASLDPHQIRQQQLQETLNELDKRRKEVLDASKALLGLRTTLTTELLPKLEEWK	237
P. giganteus	160	VKSISQLKDQDVFVCFRYKTHTLARTASLDPHQIRQQQLQETLNELDKRRKEVLDASKALLGLRTTLTTELLPKLEEWK	239
P. vampyrus	160	VKSISQLKDQDVFVCFRYKTHTLARTASLDPHQIRQQQLQETLNELDKRRKEVLDASKALLGLRTTLTTELLPKLEEWK	239
P. rodricensis	160	VKSISQLKDQDVFVCFRYKTHTLARTASLDPHQIRQQQLQETLNELDKRRKEVLDASKALLGLRTTLTTELLPKLEEWK	239
R. aegyptiacus	160	VKSISQLKDQDVFVCFRYKTHISVKTTPSLDPHQIRHQQLQETLNELDKRRKEVLDSSKALLGLRTTLTTELLPKLEEWK	239
R. ferrumequinum	161	VKSISQLKDQDVFVCFRYNTQKSVRTPSLDPHQTRHQQLQETLNELDKRRKEVLDTSKALLGLRTTLTTELLPKLEEWK	240
S. hondurensis	160	VKSISQLKDQDVFVCFRYKTQAPVRTASLDPHHTKQQLQETLNELDKRRKEVLDSSRALLGLRTTLTTELLPKLEEWK	239
A. jamaicensis	160	VKSISQLKDQDVFVCFRYKTQAPVRTASLDPHHTKQQLQETLNELDKRRKEVLDSSRALLGLRTTLTTELLPKLEEWK	239
P. discolor	159	VKSISQLKDQDVFVCFRYKTQAPVRTASLDPHHTKQQLQETLNELDKRRKEVLDSSRALLGLRTTLTTELLPKLEEWK	238
P. hasatus	159	VKSISQLKDQDVFVCFRYKTQAPVRTASLDPHHTKQQLQETLNELDKRRKEVLDSSRALLGLRTTLTTELLPKLEEWK	238
D. rotundus	160	VKSISQLKDQDVFVCFRYKTQAPVRTASLDPHHTKQQLQETLNELDKRRKEVLDSSRALLGLRTTLTTELLPKLEEWK	239
E. fuscus	160	VKSISQLKDQDVFVCFRYKTQAPVRTASLDPHHTKQQLQETLNELDKRRKEVLDSSRALLGLRTTLTTELLPKLEEWK	239
H. armiger	160	VKSISQLKDQDVFVCFRYKTQAPVRTASLDPHHTKQQLQETLNELDKRRKEVLDSSRALLGLRTTLTTELLPKLEEWK	239
M. molossus	160	VKSISQLKDQDVFVCFRYKTQAPVRTASLDPHHTKQQLQETLNELDKRRKEVLDSSRALLGLRTTLTTELLPKLEEWK	238
M. natalensis	160	VKSISQLKDQDVFVCFRYKTQAPVRTASLDPHHTKQQLQETLNELDKRRKEVLDSSRALLGLRTTLTTELLPKLEEWK	238
M. brandtii	160	VKSISQLKDQDVFVCFRYKTQAPVRTASLDPHHTKQQLQETLNELDKRRKEVLDSSRALLGLRTTLTTELLPKLEEWK	239
M. lucifugus	160	VKSISQLKDQDVFVCFRYKTQAPVRTASLDPHHTKQQLQETLNELDKRRKEVLDSSRALLGLRTTLTTELLPKLEEWK	239
M. myotis	160	VKSISQLKDQDVFVCFRYKTQAPVRTASLDPHHTKQQLQETLNELDKRRKEVLDSSRALLGLRTTLTTELLPKLEEWK	239
M. davidii	160	VKSISQLKDQDVFVCFRYKTQAPVRTASLDPHHTKQQLQETLNELDKRRKEVLDSSRALLGLRTTLTTELLPKLEEWK	239
P. kuhlii	160	VKSISQLKDQDVFVCFRYKTQAPVRTASLDPHHTKQQLQETLNELDKRRKEVLDSSRALLGLRTTLTTELLPKLEEWK	238
H. sapiens	160	VKSISQLKDQDVFVCFRYKTQAPVRTASLDPHHTKQQLQETLNELDKRRKEVLDSSRALLGLRTTLTTELLPKLEEWK	239

*Supplementary Figure 5 continues on next page

P. alecto	238	VQQQKACIGSREDG--GLELSQLEKWFTDGAKLLFHLRQLLKKELKGLSHLVSYHHDDPLTTGVDLR	EAQVTELLQRLLLR	315
P. giganteus	240	VQQQKACIGSREDG--GLELSQLEKWFTDGAKLLFHLRQLLKKELKGLSHLVSYHHDDPLTTGVDLR	EAQVTELLQRLLLR	317
P. vampyrus	240	VQQQKACIGSREDG--GLELSQLEKWFTDGAKLLFHLRQLLKKELKGLSHLVSYHHDDPLTTGVDLR	EAQVTELLQRLLLR	317
P. rodricensis	240	VQQQKACIGSREDG--GLELSQLEKWFTDGAKLLFHLRQLLKKELKGLSHLVSYHHDDPLTTGVDLR	EAQVTELLQRLLLR	317
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R. ferrumequinum	241	VQQQKACIGAPLDG--GLELLQLEKWFTDGAKLLFHLRQLLKKELKGLSHLVSYHDDPLTKGVDLR	EAQVTELLQRLLHRA	318
S. hondurensis	240	AQQQKACIGAPTNGGLELELLQLLEKWFTDGAKLLFHLRQLLKKELKGLSLVITYENDPLTKGVDMQEAQVM	MELLQRLLHRA	319
A. jamaicensis	240	AQQQKACIGAPTNGGLELELLQLLEKWFTDGAKLLFHLRQLLKKELKGLSLVITYENDPLTKGVDMQEAQVM	MELLQRLLHRA	319
P. discolor	239	AQQQKACIGAPTNG--GLQLLQLEKWFTDGAKLLFHLRQLLKKELKGLSLVITYENDPLTKGVDMQEAQVM	MELLQRLLHRA	316
P. hasatus	239	AQQQKACIGAPTNG--GLQLLQLEKWFTDGAKLLFHLRQLLKKELKGLSLVITYENDPLTKGVDMQEAQVM	MELLQRLLHRA	316
D. rotundus	240	AQQQKACIGAPTNG--GLELLQLEKWFTDGAKLLFHLRQLLKKELKGLSLVITYQNDPLTKGVDMQEAQVM	MELLQRLLHRA	317
E. fuscus	240	AQQQKACIGAPPDG--GLELLQLEKWFTDGAKLLFHLRQLLKKELKGLSLVITYPNDPLITGVDLQEAQVTELLQ	HLLHRA	317
H. armiger	240	VQQQKACIGAPVDG--GLELFQLEKWFTDGAKLLFHLRQLLKKELKGLSRLVSYQDDPLTKGVHLQEAQVTELLQ	RLLHRA	317
M. molossus	239	AQQQKACIGAPLDG--GVELPQLEKWFTDGAKLLFHLRQLLKKELKGLSRLVSYQNDPLTKGVDLQEAQVTELLQ	RLLHRA	316
M. natalensis	239	AQQQKACIGAPQDG--GLGLLQLEKWFTDGAKLLFHLRQLLKKELKGLSNLVSYENDPLTKGVDLQEAQVTELLQ	RLLHRA	316
M. brandtii	240	VQQQKTCIGAPPDG--GLELLQLEKWFTDGAKLLFHLRQLLKKELKGLSRLVSYENDPLITGVDLQEAQVTELLQ	HLLHRA	317
M. lucifugus	240	VQQQKTCIGAPPDG--GLELLQLEKWFTDGAKLLFHLRQLLKKELKGLSRLVSYENDPLITGVGOQEAQVTELLQ	HLLHRA	317
M. myotis	240	VQQQKTCIGAPPDG--GLELLQLEKWFTDGAKLLFHLRQLLKKELKGLSRLVSYENDPLISGVGLQEAQVTELLQ	HLLHRA	317
M. davidii	240	VQQQKTCIGAPPDG--GLELLQLEKWFTDGAKLLFHLRQLLKKELKGLSRLVSYENDPLITGVDLQEAQVTELLQ	HLLHRA	317
P. kuhlii	239	AQQQRTTCIGAPAG--GLELVQLEKWFTDGAKLLFHLRQLLKKELKGLS-HVSYDNDRLASGADQQQARATELLR	HLLHRA	315
H. sapiens	240	AQQQKACIRAPIDH--GLE--QLETWFTDGAKLLFHLRQLLKKELKGLSCLVSYQDDPLTKGVDLR	EAQVTELLQRLLHRA	315

P. alecto	316	FVVETQPCMPQTPHRPLILRTGSKFTVTRRLVRLQEGNETLTAEVFIDRNPLQSQGRKFNIILTSNRKTLTPEKGQSQG	395
P. giganteus	318	FVVETQPCMPQTPHRPLILRTGSKFTVTRRLVRLQEGNETLTAEVFIDRNPLQSQGRKFNIILTSNRKTLTPEKGQSQG	397
P. vampyrus	318	FVVETQPCMPQTPHRPLILRTGSKFTVTRRLVRLQEGNETLTAEVFIDRNPLQSQGRKFNIILTSNRKTLTPEKGQSQG	397
P. rodricensis	318	FVVETQPCMPQTPHRPLILRTGSKFTVTRRLVRLQEGNETLTAEVFIDRNPLQSQGRKFNIILTSNRKTLTPEKGQSQG	397
R. aegyptiacus	318	FVVETQPCMPQTPHRPLILRTGSKFTVTRRLVRLQEGNESLTAEVFIDRNPLQSQGRKFNIILTSNRKTLTPEKGQSQG	397
R. ferrumequinum	319	FVVETQPCMPQTPHRPLILRTGSKFTVTRRLVRLQEGNETLTAEVSIDRNPPQSQGRKFNIILTSNRKTLTPEKGQSQG	398
S. hondurensis	320	FVVETQPCMPQTLHRPLILRTGSKFTVTRRLVRLQEGSESSTADEVFIDRNPPQSQGRKFNIILTSNRKTLTPEKGQSQG	399
A. jamaicensis	320	FVVETQPCMPQTYHRPLILRTGSKFTVTRRLVRLQEGSESSTADEVFIDRNPPQSQGRKFNIILTSNRKTLTPEKGQSQG	399
P. discolor	317	FVVETQPCMPQTPHRPLILRTGSKFTVTRRLVRLQEGSESSTADEVFIDRNPPQSQGRKFNIILTSNRKTLTPEKGQSQG	396
P. hasatus	317	FVVETQPCMPQTPHRPLILRTGSKFTVTRRLVRLQEGSESSTADEVFIDRNPPQSQGRKFNIILTSNRKTLTPEKGQSQG	396
D. rotundus	318	FVVETQPCMPQTPHRPLILRTGSKFTVTRRLVRLQEGSESSTADEVFIDRNPPQSQGRKFNIILTSNRKTLTPEKGQSQG	397
E. fuscus	318	FVVETQPCMPQTPHRPLILRTGSKFTVTRRLVRLQEGSESSTADEVFIDKTPPQSQSFRKFNIILTSNRKTLTPEKGQSQG	397
H. armiger	318	FVVENQPCMPQTPHRPLILRTGSKFTVTRRLVRLQEGNESLTAEVSIDRNPPQSQGRKFNIILTSNRKTLTPEKGQSQG	397
M. molossus	317	FVVETQPCMPQTLHRPLILRTGSKFTVTRRLVRLQEGSESSTADEVFIDRNPPQSQSFRKFNIILTSNRKTLTPEKGQSQG	396
M. natalensis	317	FVITETQPCMPQTPHRPLILRTGSKFTVTRRLVRLQEGSESSTADEVFIDRNPPQSQGRKFNIILTSNRKTLTPEKGQSQG	396
M. brandtii	318	FVVETQPCMPQTPHRPLILRTGSKFTVTRRLVRLQEGSESSTADEVFIDKNPPQSQGRKFNIILTSNRKTLTPEKGQSQG	397
M. lucifugus	318	FVVETQPCMPQTPHRPLILRTGSKFTVTRRLVRLQEGSESSTADEVFIDKNPPQSQGRKFNIILTSNRKTLTPEKGQSQG	397
M. myotis	318	FVVETQPCMPQTPHRPLILRTGSKFTVTRRLVRLQEGSESSTADEVFIDKDPQSQGRKFNIILTSNRKTLTPEKGQSQG	397
M. davidii	318	FVVETQPCMPQTPHRPLILRTGSKFTVTRRLVRLQEGSESSTADEVFIDKNPPQSQGRKFNIILTSNRKTLTPEKGQSQG	397
P. kuhlii	316	FVVESSQPCMPQTPHRPLILRTGSKFTVTRRLVRLQEGSESSTADEVFIDKNPPQSQGRKFNIILTSNRKTLTPEKGQSQG	395
H. sapiens	316	FVVETQPCMPQTPHRPLILKGTGSKFTVTRRLVRLQEGNESLTVESIDRNPPQLQGRKFNIILTSNRKTLTPEKGQSQG	395

P. alecto	396	LIWDFS YLTLLVEQRSGSGSGKGNKGLLGVTLEELHIISFTVKYTYQGLKQELKTDTLPPVVIISNMNQLSIAWASVLWFNLL	475
P. giganteus	398	LIWDFS YLTLLVEQRSGSGSGKGNKGLLGVTLEELHIISFTVKYTYQGLKQELKTDTLPPVVIISNMNQLSIAWASVLWFNLL	477
P. vampyrus	398	LIWDFS YLTLLVEQRSGSGSGKGNKGLLGVTLEELHIISFTVKYTYQGLKQELKTDTLPPVVIISNMNQLSIAWASVLWFNLL	477
P. rodricensis	398	LIWDFS YLTLLVEQRSGSGSGKGNKGLLGVTLEELHIISFTVKYTYQGLKQELKTDTLPPVVIISNMNQLSIAWASVLWFNLL	477
R. aegyptiacus	398	LIWDFS YLTLLVEQRSGSGSGKGNKGLLGVTLEELHIISFTVKYTYQGLKQELKTDTLPPVVIISNMNQLSIAWASVLWFNLL	477
R. ferrumequinum	399	LIWDFGYLTLLVEQRSGSGSGKGSNKGLLGVTLEELHIISITVKYTYQGLKQELKTDTLPPVVIISNMNQLSIAWASVLWFNLL	478
S. hondurensis	400	LIWDFRYLTLLTEQRSGSGSGKGSNKGLLGVTLEELHIISFTVRYTYQGLKQELKTDTLPPVVIISNTNQLSIAWASVLWFNLL	479
A. jamaicensis	400	LIWDFRYLTLLTEQRSGSGSGKGSNKGLLGVTLEELHIISFTVRYTYQGLKQELKTDTLPPVVIISNTNQLSIAWASVLWFNLL	479
P. discolor	397	LIWDFRYLTLLTEQRSGSGSGKGSNKGLLGVTLEELHIISFTVKYTYQGLKQELKTDTLPPVVIISNTNQLSIAWASVLWFNLL	476
P. hasatus	397	LIWDFRYLTLLTEQRSGSGSGKGSNKGLLGVTLEELHIISFTVKYTYQGLKQELKTDTLPPVVIISNTNQLSIAWASVLWFNLL	476
D. rotundus	398	LIWDFRYLTLLTEQRSGSGSGKGTNKSLLGVTEELHIISFTVKYTYQGLKQELKTDTLPPVVIISNTNQLSIAWASVLWFNLL	477
E. fuscus	398	LIWDFGYLTLLVEQRSGSGSGKGSNKGLLGVTLEELHIISFTVQYTYQGLKQELKADTLPPVVIISNTNQLSIAWASVLWFNLL	477
H. armiger	398	LIWDFGYLTLLVEQRSGSGSGKGSNKGLLGVTLEELHIISITVKYTYQGLKQELKTDTLPPVVIISNMNQLSIAWASVLWFNLL	477
M. molossus	397	LIWDFGYLTLLVEQRSGSGSGKGSNKGLLGVTLEELHIISFTVKYTYQGLKQELKTDTLPPVVIISNMNQLSIAWASVLWFNLL	476
M. natalensis	397	LIWDFGYLTLLVEQRSGSGSGKGSNKGLLGVTLEELHIISFTVKYTYQGLKQELKTDTLPPVVIISNMNQLSIAWASVLWFNLL	476
M. brandtii	398	LIWDFGYLTLLVEQRSGSGSGKGSNKGLLGVTLEELHIISFTVRYTYQGLKQELKADTLPPVVIISNMNQLSIAWASVLWFNLL	477
M. lucifugus	398	LIWDFGYLTLLVEQRSGSGSGKGSNKGLLGVTLEELHIISFTVRYTYQGLKQELKADTLPPVVIISNMNQLSIAWASVLWFNLL	477
M. myotis	398	LIWDFGYLTLLVEQRSGSGSGKGSNKGLLGVTLEELHIISFTVRYTYQGLKQELKADTLPPVVIISNMNQLSIAWASVLWFNLL	477
M. davidii	398	LIWDFGYLTLLVEQRSGSGSGKGSNKGLLGVTLEELHIISFTVRYTYQGLKQELKADTLPPVVIISNMNQLSIAWASVLWFNLL	477
P. kuhlii	396	LIWDFGYLTLLVEQRSGSGSGKGSNKGLLGVTLEELHIISFTVRYTYQGLKQELKADTLPPVVIISNMNQLSIAWASVLWFNLL	475
H. sapiens	396	LIWDFGYLTLLVEQRSGSGSGKGSNKGLLGVTLEELHIISFTVKYTYQGLKQELKTDTLPPVVIISNMNQLSIAWASVLWFNLL	475

*Supplementary Figure 5 continues on next page

P. alecto	476	SSNPQNQQFFSSPPKAPWS	LLGPALSWQFL	SYVGRGLDQDQLNMLRDKLFEQKSKNED	ALLSWADFTKRESPPGKLPFWT	555
P. giganteus	478	SSNPQNQQFFSSPPKAPWS	LLGPALSWQFL	SYVGRGLDQDQLNMLRDKLFEQKSKNED	ALLSWADFTKRESPPGKLPFWT	557
P. vampyrus	478	SSNPQNQQFFSSPPKAPWS	LLGPALSWQFL	SYVGRGLDQDQLNMLRDKLFEQKSKNED	ALLSWADFTKRESPPGKLPFWT	557
P. rodricensis	478	SSNPQNQQFFSSPPKAPWS	LLGPALSWQFL	SYVGRGLDQDQLNMLRDKLFEQKSKNED	ALLSWADFTKRESPPGKLPFWT	557
R. aegyptiacus	478	SSNPQNQQFFSSPPKAPWS	LLGPALSWQFL	SYVGRGLDQDQLNMLRDKLFEQKSKNED	ALLSWADFTKRESPPGKLPFWT	557
R. ferrumequinum	479	TNPQNQQFFSSPPKAPWS	LLGPALSWQFL	SYVGRGLDQDQLSMLKDKLFGQNSGNEGALLSWADFTKRESPPGKLPFWT	558	558
S. hondurensis	480	SSNPQNQQFFSSPPKAPWS	LLGPALSWQFL	SYVGRGLDQDQLSMLRDKLFGQNSGNEGALLSWADFTKRESPPGKLPFWT	559	559
A. jamaicensis	480	SSNPQNQQFFSSPPKAPWN	LLGPALSWQFSSYVGRGLDQDQLSMLRDKLFGQNSGNEGALLSWADFTKRESPPGKLPFWT	559	559	
P. discolor	477	SSNPQNQLFFSSPPKAPWN	LLGPALSWQFSSYVGRGLDQDQLSMLRDKLFGQNSGNEGALLSWADFTKRESPPGKLPFWT	556	556	
P. hasatus	477	SSNPQNQLFFSSPPKAPWN	LLGPALSWQFSSYVGRGLDQDQLSMLRDKLFGQNSGNEGALLSWADFTKRESPPGKLPFWT	556	556	
D. rotundus	478	SSNPQNQQFFSSPPKAPWN	LLGPALSWQFSSYVGRGLDQDQLSMLKDKLFGQNSGNEGALLSWADFTKRESPPGKLPFWT	557	557	
E. fuscus	478	SSNPQNQQFFSSPPKAPWT	LLGPALSWQFSSYVGRGLDQDQLSMLKDKLFGQNSGNEGALLSWADFTKRESPPGKLPFWT	557	557	
H. armiger	478	TNPQNQQFFSSPPKAPWS	LLGPALSWQFL	SYVGRGLDQDQLSMLKDKLFGQNSGNEGALLSWADFTKRESPPGKLPFWT	557	557
M. molossus	477	SSNPQNQQFFSSPPKAPWN	LLGPALSWQFSSYVGRGLDQDQLNMLRDKLFGQNSGNEGALLSWADFTKRESPPGKLPFWT	556	556	
M. natalensis	477	SSNPQNQQFFSSPPKAPWN	LLGPALSWQFSSYVGRGLDQDQLSMLKDKLFGQNSGNEGALLSWADFTKRESPPGKLPFWT	556	556	
M. brandtii	478	SSNPQNQQFFSSPPKAPWT	LLGPALSWQFSSYVGRGLDQDQLSMLKDKLFGQNSGNEGALLSWADFTKRESPPGKLPFWT	557	557	
M. lucifugus	478	SSNPQNQQFFSSPPKAPWT	LLGPALSWQFSSYVGRGLDQDQLSMLKDKLFGQNSGNEGALLSWADFTKRESPPGKLPFWT	557	557	
M. myotis	478	SSNPQNQQFFSSPPKAPWT	LLGPALSWQFSSYVGRGLDQDQLSMLKDKLFGQNSGNEGALLSWADFTKRESPPGKLPFWT	557	557	
M. davidii	478	SSNPQNQQFFSSPPKAPWT	LLGPALSWQFSSYVGRGLDQDQLSMLKDKLFGQNSGNEGALLSWADFTKRESPPGKLPFWT	557	557	
P. kuhlii	476	SSNPQNQQFFSSPPKAPWA	LLGPALSWQFSSYVGRGLDQDQLSMLKDKLFGQNSGNEGALLSWADFTKRESPPGKLPFWT	555	555	
H. sapiens	476	SPNLPQNQQFFSSPPKAPWS	LLGPALSWQFSSYVGRGLDQDQLSMLRDKLFGQNSGNEGALLSWADFTKRESPPGKLPFWT	555	555	

P. alecto	556	WLDKILDLVHDHLKDLWNDGRIMGFVSRSQERLLKKT	ISGTFLRLFSETSEGGITCSWVEHQDDDKVLIYSVPFTKEV	635
P. giganteus	558	WLDKILDLVHDHLKDLWNDGRIMGFVSRSQERLLKKT	ISGTFLRLFSETSEGGITCSWVEHQDDDKVLIYSVPFTKEV	637
P. vampyrus	558	WLDKILDLVHDHLKDLWNDGRIMGFVSRSQERLLKKT	ISGTFLRLFSETSEGGITCSWVEHQDDDKVLIYSVPFTKEV	637
P. rodricensis	558	WLDKILDLVHDHLKDLWNDGRIMGFVSRSQERLLKKT	ISGTFLRLFSETSEGGITCSWVEHQDDDKVLIYSVPFTKEV	637
R. aegyptiacus	558	WLDKILDLVHDHLKDLWNDGRIMGFVSRSQERLLKKT	ISGTFLRLFSETSEGGITCSWVEHQDDDKVLIYSVPFTKEV	637
R. ferrumequinum	559	WLDKILDLVHDHLKDLWKDGRIMGFVSRSQERLLKKT	ISGTFLRLFSETSEGGITCSWVEHQDDDKVLIYSVPFTKEV	638
S. hondurensis	560	WLDKILDLVHDHLKDLWKDGRIMGFVSRSQERLLKKT	ISGTFLRLFSETSEGGITCSWVEHQDDDKVLIYSVPFTKEV	639
A. jamaicensis	560	WLDKILDLVHDHLKDLWKDGRIMGFVSRSQERLLKKT	ISGTFLRLFSETSEGGITCSWVEHQDDDKVLIYSVPFTKEV	639
P. discolor	557	WLDKILDLVHDHLKDLWKDGRIMGFVSRSQERLLKKT	ISGTFLRLFSETSEGGITCSWVEHQDDDKVLIYSVPFTKEV	636
P. hasatus	557	WLDKILDLVHDHLKDLWKDGRIMGFVSRSQERLLKKT	ISGTFLRLFSETSEGGITCSWVEHQDDDKVLIYSVPFTKEV	636
D. rotundus	558	WLDKILDLVHDHLKDLWKDGRIMGFVSRSQERLLKKT	ISGTFLRLFSETSEGGITCSWVEHQDDDKVLIYSVPFTKEV	637
E. fuscus	558	WLDKILDLVHDHLKDLWNDGRIMGFVSRSQERLLKKT	ISGTFLRLFSETSEGGITCSWVEHQDDDKVLIYSVPFTKEV	637
H. armiger	558	WLDKILDLVHDHLKDLWNRGLIMGFVSRSQERLLKKT	ISGTFLRLFSETSEGGITCSWVEHQDDDKVLIYSVPFTKEV	637
M. molossus	557	WLDKILDLVHDHLKDLWNDGRIMGFVSRSQERLLKKT	ISGTFLRLFSETSEGGITCSWVEHQDDDKVLIYSVPFTKEV	636
M. natalensis	557	WLDKILDLVHDHLKDLWKDGRIMGFVSRSQERLLKKT	ISGTFLRLFSETSEGGITCSWVEHQDDDKVLIYSVPFTKEV	636
M. brandtii	558	WLDKILDLVHEHLKDLWNDGRIMGFVSRSQERLLKKT	ISGTFLRLFSETSEGGITCSWVEHQDDDKVLIYSVPFTKEV	637
M. lucifugus	558	WLDKILDLVHEHLKDLWNDGRIMGFVSRSQERLLKKT	ISGTFLRLFSETSEGGITCSWVEHQDDDKVLIYSVPFTKEV	637
M. myotis	558	WLDKILDLVHEHLKDLWNDGRIMGFVSRSQERLLKKT	ISGTFLRLFSETSEGGITCSWVEHQDDDKVLIYSVPFTKEV	637
M. davidii	558	WLDKILDLVHEHLKDLWNDGRIMGFVSRSQERLLKKT	ISGTFLRLFSETSEGGITCSWVEHQDDDKVLIYSVPFTKEV	637
P. kuhlii	556	WLDKILELVHDHLKDLWNDGRIMGFVSRSQERLLKKT	ISGTFLRLFSETSEGGITCSWVEHQDDDKVLIYSVPFTKEV	635
H. sapiens	556	WLDKILELVHDHLKDLWNDGRIMGFVSRSQERLLKKT	ISGTFLRLFSETSEGGITCSWVEHQDDDKVLIYSVPFTKEV	635

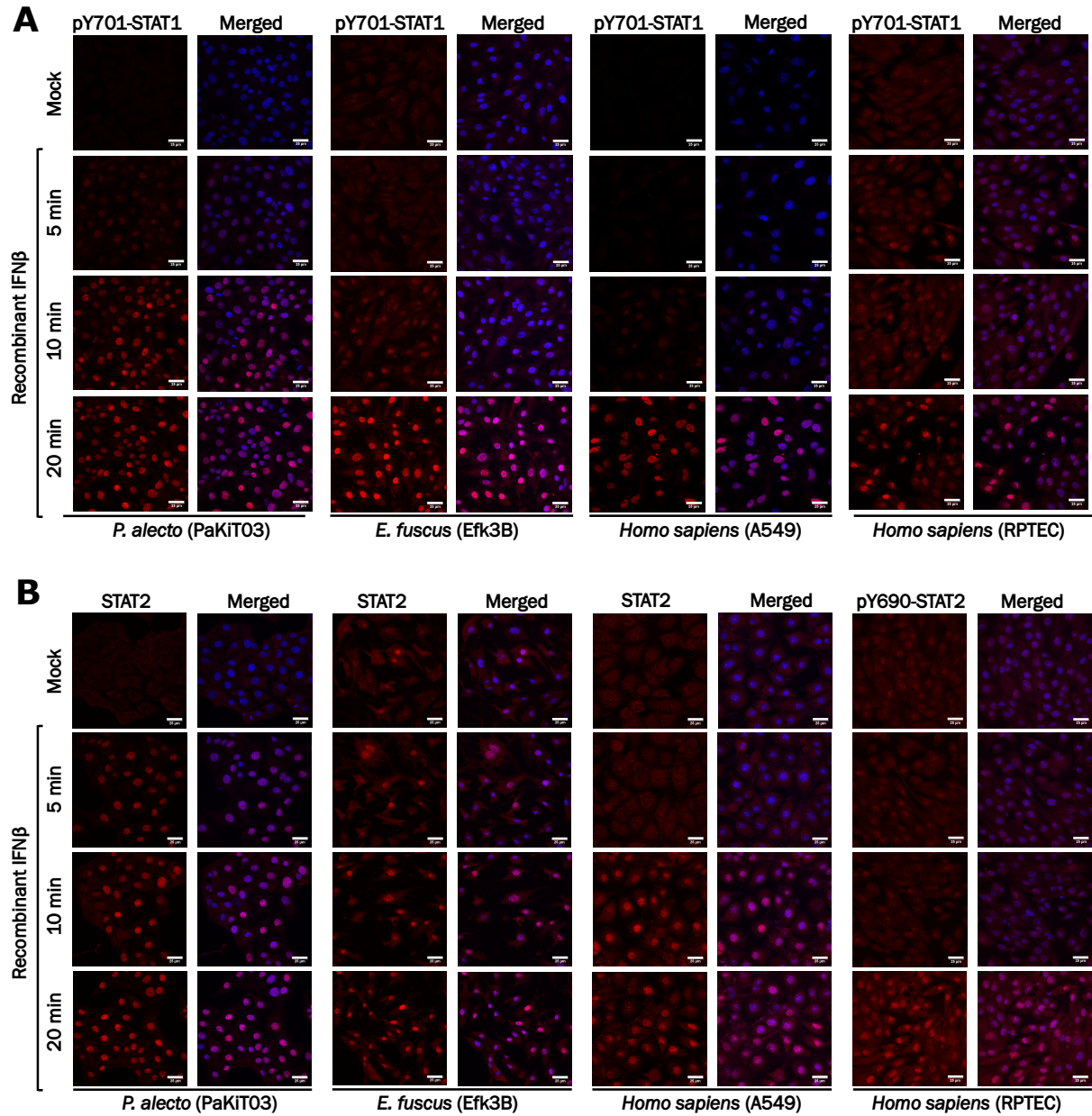
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P. giganteus	638	LQSLPLTKIIRHYQLLTEENIPENPLCFLYPRI	PRDEAFGCYYEDKVNLE	ERRKYLKHKLI	IVVSNRQVDELQQLPEPNLE	717
P. vampyrus	638	LQSLPLTKIIRHYQLLTEENIPENPLCFLYPRI	PRDEAFGCYYEDKVNLE	ERRKYLKHKLI	IVVSNRQVDELQQLPEPNLE	717
P. rodricensis	638	LQSLPLTKIIRHYQLLTEENIPENPLCFLYPRI	PRDEAFGCYYEDKVNLE	ERRKYLKHKLI	IVVSNRQVDELQQLPEPNLE	717
R. aegyptiacus	638	LQSLPLTKIIRHYQLLTEENIPENPLCFLYPRI	PRDEAFGCYYEDKVNLE	ERRKYLKHKLI	IVVSNRQVDELQQLPEPNLE	717
R. ferrumequinum	639	LQSLPLTKIIRHYQLLTEENIPENPLRFLYPR	IPRDEAFGCYYEDKVNLE	ERRKYLKHKLI	IVVSNRQVDELQQLPEPNLE	718
S. hondurensis	640	LQSLPLTKIIRHYQLLTEENIPENPLRFLYPR	IPRDEAFGCYYEDKVNLE	ERRKYLKHKLI	IVVSNRQVDELQQLPEPNLE	719
A. jamaicensis	640	LQSLPLTKIIRHYQLLTEENIPENPLRFLYPR	IPRDEAFGCYYEDKVNLE	ERRKYLKHKLI	IVVSNRQVDELQQLPEPNLE	719
P. discolor	637	LQSLPLTKIIRHYQLFTEENIPENPLCFLYPRI	PRDEAFGCYYEDKVNLE	ERRKYLKHKLI	IVVSNRQVDELQQLPEPNLE	716
P. hasatus	637	LQSLPLTKIIRHYQLFTEENIPENPLCFLYPRI	PRDEAFGCYYEDKVNLE	ERRKYLKHKLI	IVVSNRQVDELQQLPEPNLE	716
D. rotundus	638	LQSLPLTKIIRHYQLFTEENIPENPLCFLYPRI	PRDEAFGCYYEDKVNLE	ERRKYLKHKLI	IVVSNRQVDELQQLPEPNLE	717
E. fuscus	638	LQSLPLTKIIRHYQLLTEENIPENPLRFLYPR	IPRDEAFGCYYEDKVNLE	ERRKYLKHKLI	IVVSNRQVDELQQLPEPNLE	717
H. armiger	638	LQSLPLTKIIRHYQLLTEENIPENPLRFLYPR	IPRDEAFGCYYEDKVNLE	ERRKYLKHKLI	IVVSNRQVDELQQLPEPNLE	717
M. molossus	637	LQSLPLTKIIRHYQLLTEENIPENPLCFLYPRI	PRDEAFGCYYEDKVNLE	ERRKYLKHKLI	IVVSNRQVDELQQLPEPNLE	716
M. natalensis	637	LQSLPLTKIIRHYQLLTEENIPENPLCFLYPRI	PRDEAFGCYYEDKVNLE	ERRKYLKHKLI	IVVSNRQVDELQQLPEPNLE	716
M. brandtii	638	LQSLPLTKIIRHYQLLTEENIPENPLRFLYPR	IPRDEAFGCYYEDKVNLE	ERRKYLKHKLI	IVVSNRQVDELQQLPEPNLE	717
M. lucifugus	638	LQSLPLTKIIRHYQLLTEENIPENPLRFLYPR	IPRDEAFGCYYEDKVNLE	ERRKYLKHKLI	IVVSNRQVDELQQLPEPNLE	717
M. myotis	638	LQSLPLTKIIRHYQLLTEENIPENPLRFLYPR	IPRDEAFGCYYEDKVNLE	ERRKYLKHKLI	IVVSNRQVDELQQLPEPNLE	717
M. davidii	638	LQSLPLTKIIRHYQLLTEENIPENPLRFLYPR	IPRDEAFGCYYEDKVNLE	ERRKYLKHKLI	IVVSNRQVDELQQLPEPNLE	717
P. kuhlii	636	LQSLPLTKIIRHYQLLTEENIPENPLRFLYPR	IPRDEAFGCYYEDKVNLE	ERRKYLKHKLI	IVVSNRQVDELQQLPEPNLE	715
H. sapiens	636	LQSLPLTKIIRHYQLLTEENIPENPLRFLYPR	IPRDEAFGCYYEDKVNLE	ERRKYLKHKLI	IVVSNRQVDELQQLPEPNLE	715

*Supplementary Figure 5 continues on next page

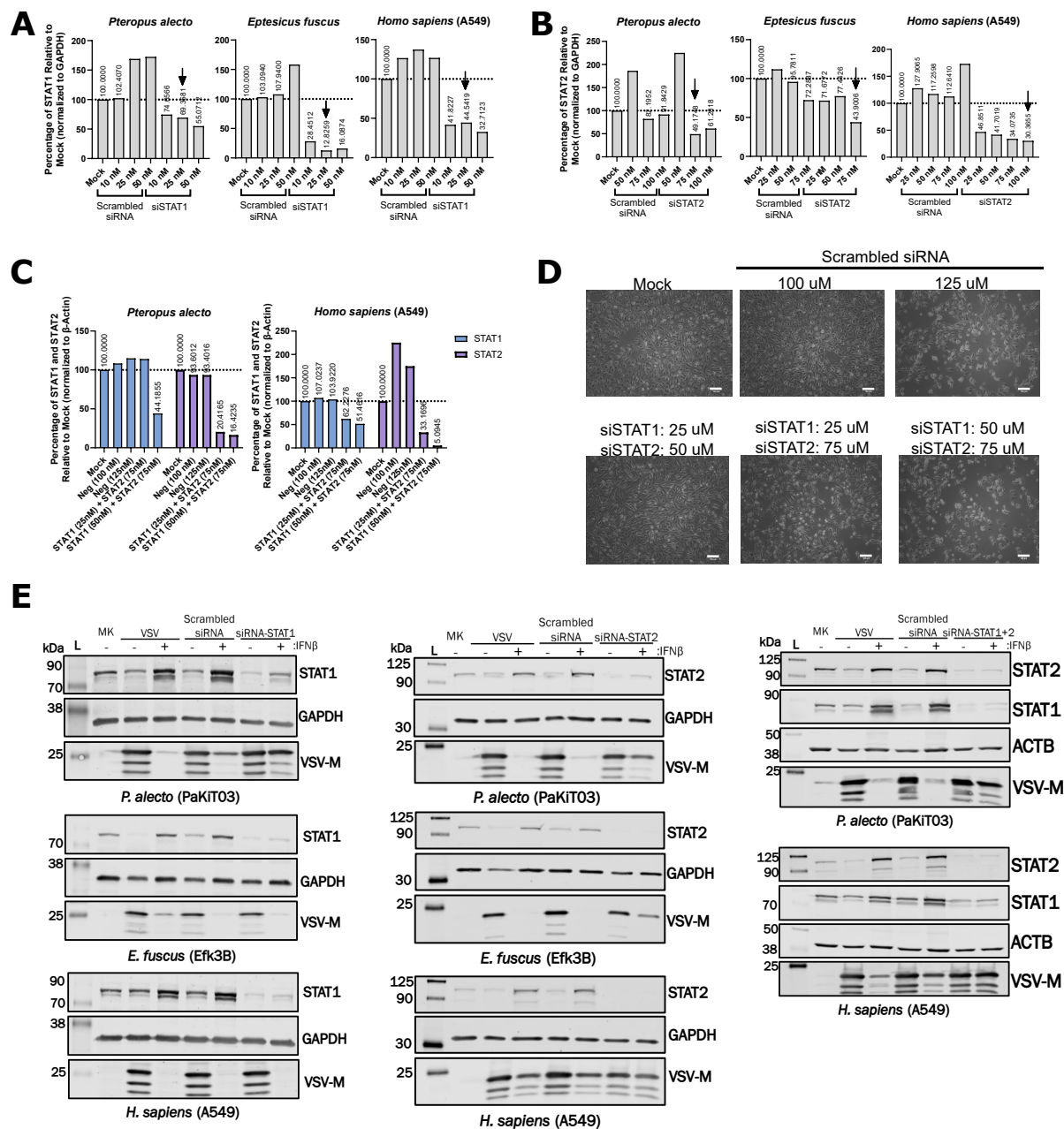
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P. vampyrus	718	PEAESELELYPGLAPEP	--EPGLGLELEPLLKAGLDLGPPLERMLEPTPG	---TVSQGMS	ELNLGPELKLEPI	LGPI	SQP	791
P. rodricensis	718	PEAESELELYPGLAPEP	--EPGLGLELEPLLKAGLDLGPPLERMLEPTPG	---TVSQGMS	ELNLGPELKLEPI	LGPI	SQP	791
R. aegyptiacus	718	LEVESSELYPGLAPEP	--DPGLGLELEPLLKAGLDLGPPLERMLEPTPG	---TVSQGMS	ELNLGPELKLEPI	LGPI	SQP	791
R. ferrumequinum	719	PEVESSELYPGLAPEP	--EPGLGLELEPLLKAGLDLGPPLERMLEPTPG	---TVSQGMS	ELNLGPELKLEPI	LGPI	SQP	791
S. hondurensis	720	PEVESSELYPGLAPEP	--EPGLGLELEPLLKAGLDLGPPLERMLEPTPG	---TVSQGMS	ELNLGPELKLEPI	LGPI	SQP	791
A. jamaicensis	720	PEVESSELYPGLAPEP	--EPGLGLELEPLLKAGLDLGPPLERMLEPTPG	---TVSQGMS	ELNLGPELKLEPI	LGPI	SQP	791
P. discolor	717	PEVESSELYPGLAPEP	--EPGLGLELEPLLKAGLDLGPPLERMLEPTPG	---TVSQGMS	ELNLGPELKLEPI	LGPI	SQP	791
P. hasatus	717	PEVESSELYPGLAPEP	--EPGLGLELEPLLKAGLDLGPPLERMLEPTPG	---TVSQGMS	ELNLGPELKLEPI	LGPI	SQP	791
D. rotundus	718	PEVESSELYPGLAPEP	--EPGLGLELEPLLKAGLDLGPPLERMLEPTPG	---TVSQGMS	ELNLGPELKLEPI	LGPI	SQP	791
E. fuscus	718	PEVESSELYPGLAPEP	--EPGLGLELEPLLKAGLDLGPPLERMLEPTPG	---TVSQGMS	ELNLGPELKLEPI	LGPI	SQP	791
H. armiger	718	PEVESSELYPGLAPEP	--EPGLGLELEPLLKAGLDLGPPLERMLEPTPG	---TVSQGMS	ELNLGPELKLEPI	LGPI	SQP	791
M. molossus	717	PEVESSELYPGLAPEP	--EPGLGLELEPLLKAGLDLGPPLERMLEPTPG	---TVSQGMS	ELNLGPELKLEPI	LGPI	SQP	791
M. natalensis	717	PEVESSELYPGLAPEP	--EPGLGLELEPLLKAGLDLGPPLERMLEPTPG	---TVSQGMS	ELNLGPELKLEPI	LGPI	SQP	791
M. brandtii	718	PEVESSELYPGLAPEP	--EPGLGLELEPLLKAGLDLGPPLERMLEPTPG	---TVSQGMS	ELNLGPELKLEPI	LGPI	SQP	791
M. lucifugus	718	PEVESSELYPGLAPEP	--EPGLGLELEPLLKAGLDLGPPLERMLEPTPG	---TVSQGMS	ELNLGPELKLEPI	LGPI	SQP	791
M. myotis	718	PEVESSELYPGLAPEP	--EPGLGLELEPLLKAGLDLGPPLERMLEPTPG	---TVSQGMS	ELNLGPELKLEPI	LGPI	SQP	791
M. davidii	718	PEVESSELYPGLAPEP	--EPGLGLELEPLLKAGLDLGPPLERMLEPTPG	---TVSQGMS	ELNLGPELKLEPI	LGPI	SQP	791
P. kuhlii	716	PEVESSELYPGLAPEP	--EPGLGLELEPLLKAGLDLGPPLERMLEPTPG	---TVSQGMS	ELNLGPELKLEPI	LGPI	SQP	791
H. sapiens	716	PEVESSELYPGLAPEP	--EPGLGLELEPLLKAGLDLGPPLERMLEPTPG	---TVSQGMS	ELNLGPELKLEPI	LGPI	SQP	791

P. alecto	790	VPE--PD--LPHDLEHLNTEEME	IFRNSMNI	IED	IMPNGDPLLADQNTVDEAY	ILHPSHFHTEG	LIPSDY	855
P. giganteus	792	VPE--PD--LPHDLEHLNTEEME	IFRNSMNI	IED	IMPNGDPLLADQNTVDEAY	ILHPSHFHTEG	LIPSDY	857
P. vampyrus	792	VPE--PD--LPHDLEHLNTEEME	IFRNSMNI	IED	IMPNGDPLLADQNTVDEAY	ILHPSHFHTEG	LIPSDY	857
P. rodricensis	792	VPE--PD--LPHDLEHLNTEEME	IFRNSMNI	IED	IMPNGDPLLADQNTVDEAY	ILHPSHFHTEG	LIPSDY	857
R. aegyptiacus	792	VPE--PD--LPHDLEHLNTEEME	IFRNSMNI	IED	IMPNGDPLLADQNTVDEAY	ILHPSHFHTEG	LIPSDY	857
R. ferrumequinum	780	VPEPEPELPHDLRLNTEEME	IFRNSMNI	IED	IMPNGDPLLADQNTVDEAY	ILHPSHFHTEG	LIPSDY	857
S. hondurensis	786	APLEPEPD--LPHDLRLNTEEME	IFRNSMNI	IED	IMPNGDPLLADQNTVDEAY	ILHPSHFHTEG	LIPSDY	857
A. jamaicensis	786	APLEPEPD--LPHDLRLNTEEME	IFRNSMNI	IED	IMPNGDPLLADQNTVDEAY	ILHPSHFHTEG	LIPSDY	857
P. discolor	783	APLEPEPD--LPHDLRLNTEEME	IFRNSMNI	IED	IMPNGDPLLADQNTVDEAY	ILHPSHFHTEG	LIPSDY	857
P. hasatus	783	APLEPEPD--LPHDLRLNTEEME	IFRNSMNI	IED	IMPNGDPLLADQNTVDEAY	ILHPSHFHTEG	LIPSDY	857
D. rotundus	784	APLEPEPD--LPHDLRLNTEEME	IFRNSMNI	IED	IMPNGDPLLADQNTVDEAY	ILHPSHFHTEG	LIPSDY	857
E. fuscus	790	VPEPEPE--LPHDLRLNTEEME	IFRNSMNI	IED	IMPNGDPLLADQNTVDEAY	ILHPSHFHTEG	LIPSDY	857
H. armiger	783	APLEPEPD--LPHDLRLNTEEME	IFRNSMNI	IED	IMPNGDPLLADQNTVDEAY	ILHPSHFHTEG	LIPSDY	857
M. molossus	795	VPE--PD--LPHDLRLNTEEME	IFRNSMNI	IED	IMPNGDPLLADQNTVDEAY	ILHPSHFHTEG	LIPSDY	857
M. natalensis	791	VPEPEPE--LPHDLRLNTEEME	IFRNSMNI	IED	IMPNGDPLLADQNTVDEAY	ILHPSHFHTEG	LIPSDY	857
M. brandtii	784	VPEPEPE--LPHDLRLNTEEME	IFRNSMNI	IED	IMPNGDPLLADQNTVDEAY	ILHPSHFHTEG	LIPSDY	857
M. lucifugus	784	VPEPEPE--LPHDLRLNTEEME	IFRNSMNI	IED	IMPNGDPLLADQNTVDEAY	ILHPSHFHTEG	LIPSDY	857
M. myotis	787	VPEPEPE--LPHDLRLNTEEME	IFRNSMNI	IED	IMPNGDPLLADQNTVDEAY	ILHPSHFHTEG	LIPSDY	857
M. davidii	787	VPEPEPE--LPHDLRLNTEEME	IFRNSMNI	IED	IMPNGDPLLADQNTVDEAY	ILHPSHFHTEG	LIPSDY	857
P. kuhlii	774	MPAEPEESDLPHDLRLNTEEME	IFRNSMNI	IED	IMPNGDPLLADQNTVDEAY	ILHPSHFHTEG	LIPSDY	857
H. sapiens	786	VPE--PD--LPHDLRLNTEEME	IFRNSMNI	IED	IMPNGDPLLADQNTVDEAY	ILHPSHFHTEG	LIPSDY	857

Supplementary Figure 5. Bat STAT2 multiple sequence alignment. Grey boxes indicate identical residues. Purple box highlights region surrounding the tyrosine phosphorylation site in humans. ClustalW alignment was generated using MacVector software. Human sequence was included for comparison.

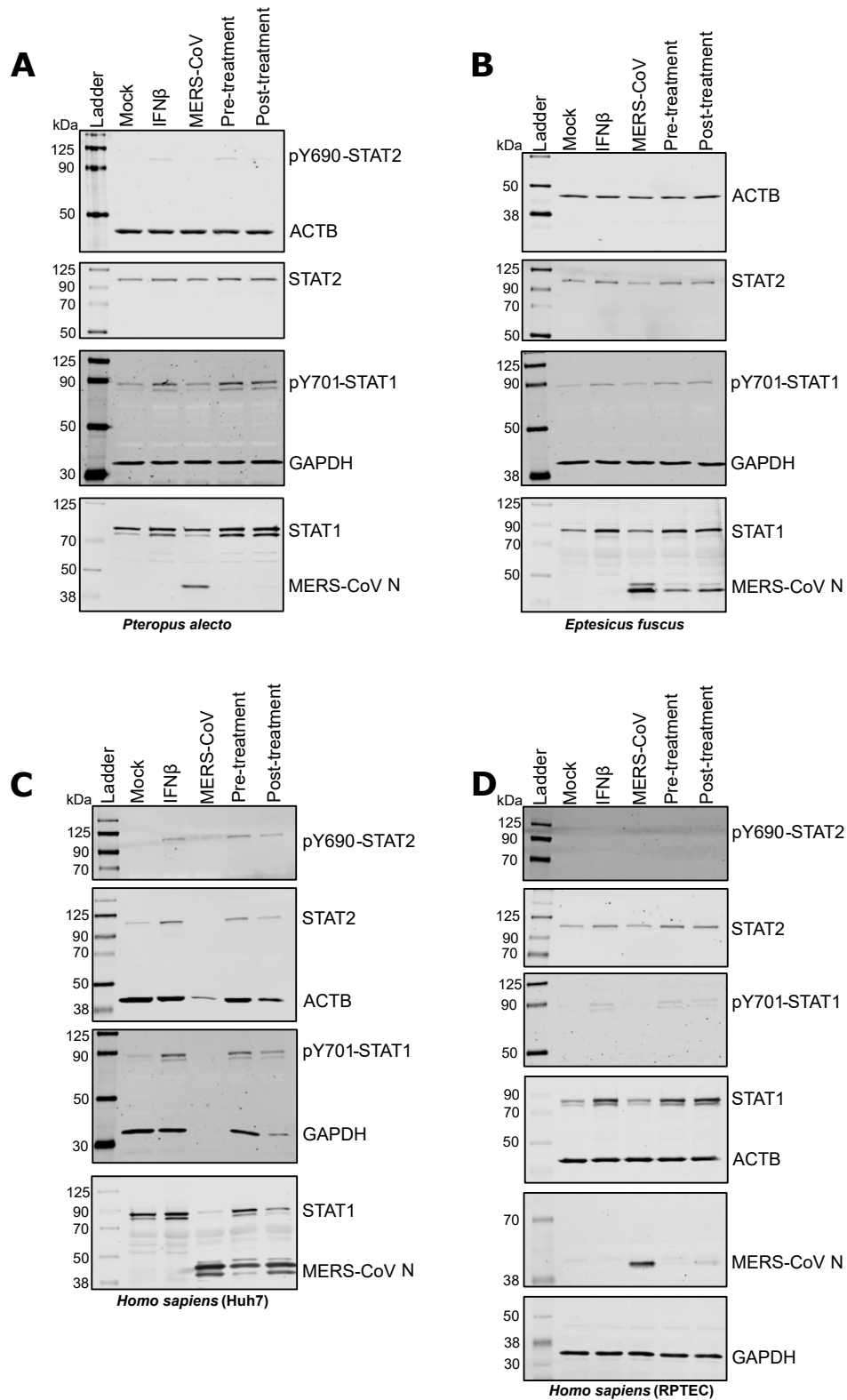


Supplementary Figure 6. Nuclear translocation of STAT1 and STAT2. *P. alecto* (PaKIT03), *E. fuscus* (EfK3B), and human A549 and RPTEC cells were treated for 5, 10, and 20 minutes with species matched IFN β (10 U/mL) or with the vehicle control. Cells were stained for pY701-STAT1 (**A**), pY690-STAT2 or STAT2 (**B**), and DAPI. Nuclear translocation of stained proteins was visualized by confocal microscopy. Scale bars = 25 μ m. Image is representative of 3 replicates.



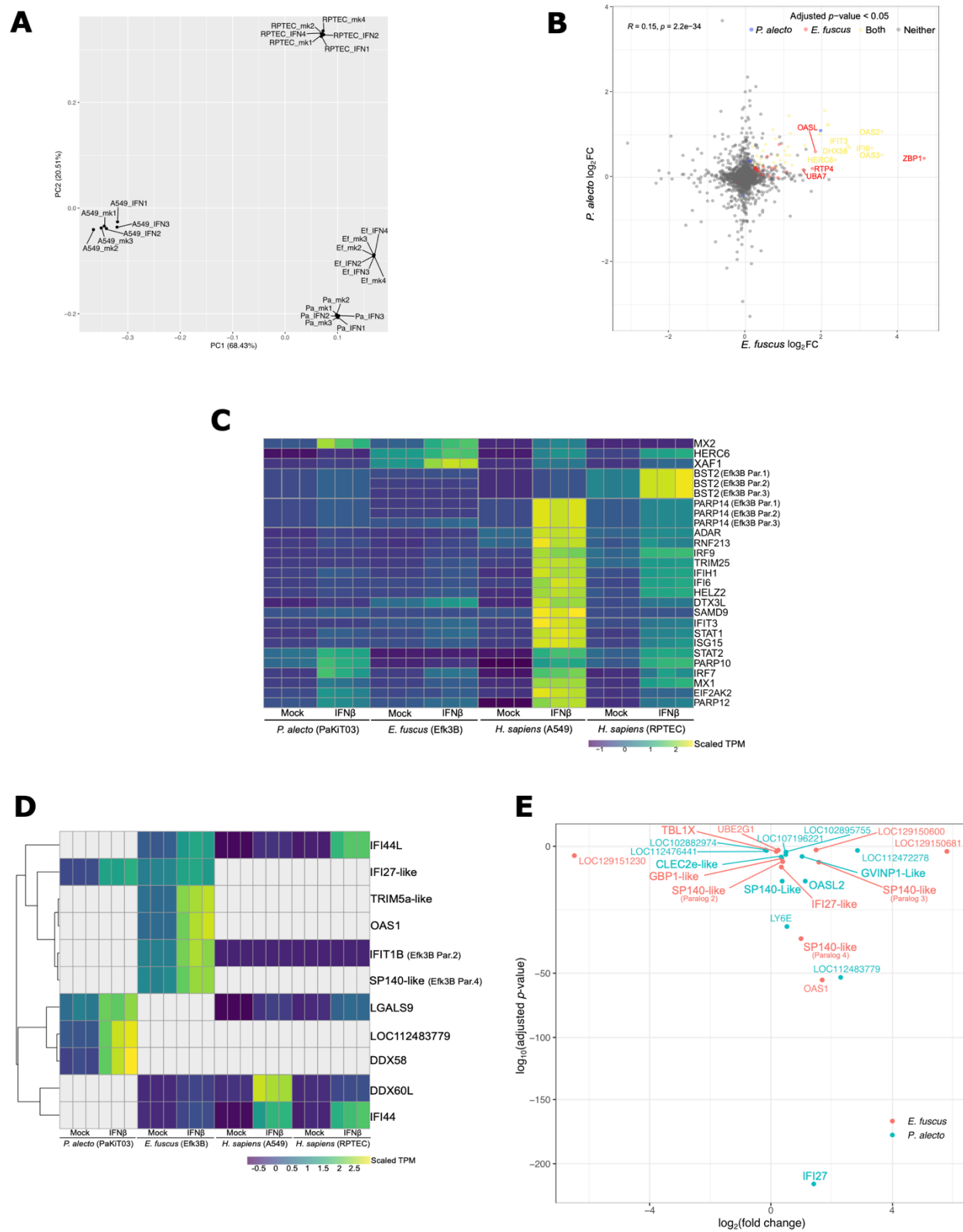
Supplementary Figure 7. siRNA-mediated knockdown of STAT1 and STAT2. *P. alecto* (PaKiT03), *E. fuscus* (EfK3B), and human A549 cells were transfected 4 hours post seeding with various concentrations of siRNA targeting STAT1 (**A**) and STAT2 (**B**) individually, and in combination to achieve a double knockdown (**C**). (**A-C**) Forty-eight hours later, protein lysates were harvested and STAT1, STAT2, GAPDH, and/or β -actin levels were quantified by immunoblotting. (**D**) Brightfield images of EfK3B cells transfected with siSTAT1 and siSTAT2 at concentrations where single knockdowns were achieved. Scale bars = 100 μ m. (**E**) PaKiT03, EfK3B, and human A549 cells were transfected with siRNA-STAT1 (25 nM), siRNA-STAT2 (75 nM), a combination of both siRNAs (STAT1, 25nM; STAT2, 75nM), or with the scrambled siRNA (control) 4 hours post

seeding cells. After 48 hours, cells were treated with species-matched IFN β (10 U/mL) for 6 hours, followed by infection with VSV-GFP (MOI 0.1) for 16 hours. Cell lysates were harvested and assessed by immunoblotting for VSV-M, GAPDH, β -actin, STAT1 and/or STAT2. Lane L represents molecular weight marker (kDa). Immunoblots are representative of 3 replicates and the full blots can be found in the Source Data file.



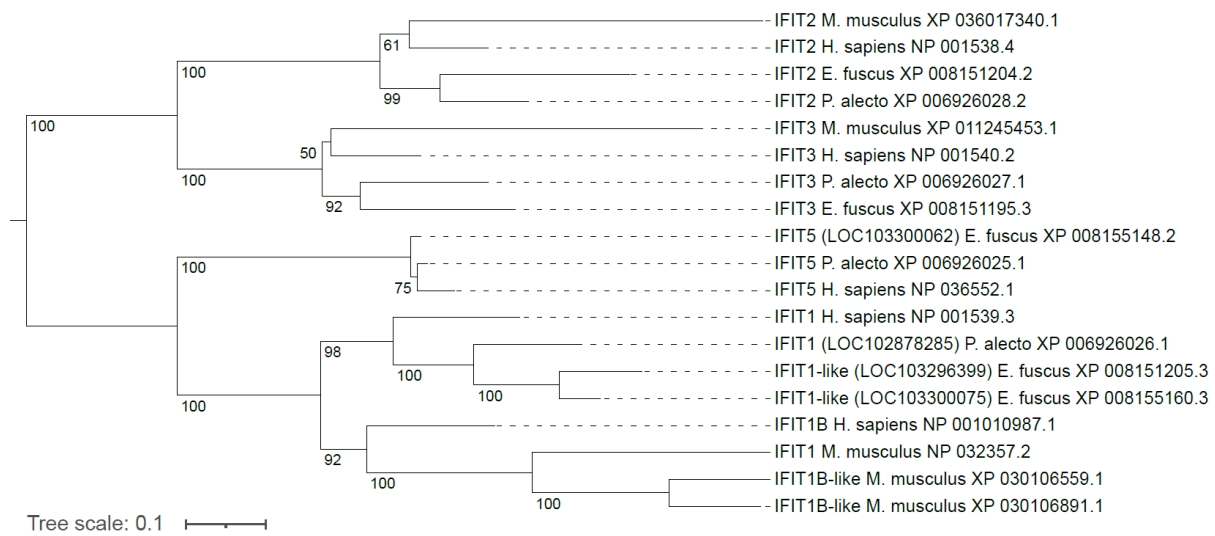
Supplementary Figure 8. Full immunoblots of IFN β treatment and MERS-CoV infection. PaKiT03 (A), Efk3B (B), Huh7 (C), and RPTEC (D) cells were pretreated with

species-matched IFN β for 6 hours prior to infection with MERS-CoV or received IFN β treatment following infection with MERS-CoV (MOI 0.1) for 48 hours. Protein lysates were harvested and probed for total STAT1 and STAT2, pY701-STAT1, pY690-STAT2, MERS-CoV nucleoprotein (N), GAPDH, and β -actin by immunoblotting. Immunoblots are representative of three replicates and are the full blots for that of **Figure 2E**.



Supplementary Figure 9. Host transcriptional response to IFN β stimulation. (A) Principal component analysis (PCA) depicting global transcriptional profiles of the

untreated and IFN β treated samples. **(B)** Function enrichment plot for differentially expressed genes (DEGs) in PaKiT03 and EfK3B cells. **(C)** Heatmap indicating the expression levels of the top 27 bat DEGs involved in the IFN β response in PaKiT03, EfK3B, A549, and RPTEC cells, ranked by *p*-value. *E. fuscus* transcript paralogs are indicated in brackets (i.e. Par.1) and are plotted against the transcript levels of a single variant that was detected in PaKiT03, A549, and RPTEC cells. **(D)** Heatmap indicating the expression levels of genes that do not exist in all four cell lines but were significantly differentially expressed in at least one cell line. 'LOC' symbol represents genes that do not have a published symbol and orthologs that have not yet been determined or named. **(E)** Top upregulated genes in PaKiT03 and EfK3B cells, orthologues for which were not clearly identifiable within the human genome or orthologous genes were not upregulated upon IFN β stimulation of human cells. Paralogs are indicated (i.e. Par.1). See **Supplementary Data 4** for the representative LOC symbol.



Supplementary Figure 10. Phylogenetic analysis of interferon-induced protein with tertratricopeptide repeats (IFIT). A midpoint rooted tree of IFIT protein sequences from *Homo sapiens*, *Mus musculus*, *Pteropus alecto*, and *Eptesicus fuscus*.

LOC103296399 1 ATGGAGCCCTGGGAGGTGCTCTACGATAATGAATCAGGAACACGTGGGGATAACATTTCACTACTCAGAGTTCTGGCTTC 80
 LOC103300075 1
 H. sapiens IFIT1B 1 0

LOC103296399 81 ATTTCCAAATGCTCCTGAAAACTACATAATAATTACTGTCTCTTTTACAGTGTGAAT-TAAATGACAAATCTATTGAG 159
 LOC103300075 1 - - - - - ATGAGTATGAATGCTGATGAAGATCAGATCCAA 33
 H. sapiens IFIT1B 1 - - - - - ATGAGTGAAGAATCTGATGAAAGCTTATTGAA 33

LOC103296399 160 GACAACTTGTTCACCTGAGATGTCACCTTACCTGGAAGCTGCACATTGAAGACACTGAACTGCAAGATTAGAAAAACAG 239
 LOC103300075 34 GCTAGGCTGGAACAGCTGAGATGTCACCTTACATGGAAGTTGACACATTGAAGACACTGAACTGCTGTATTAGAAAAACAG 113
 H. sapiens IFIT1B 34 GACAGCTGAACTTACAGCTGAGATGTCACCTTACATGGAAGTTGTTATTGAAGCTCTGAAATCTGTATTAGAAAAACAG 113

LOC103296399 240 GGTCTTGGATCAGATTGAGTTCCTAGAGCACAACCTTCAATGTGGGCATACACAACCTACTGGCCTATGTGAAACACCTGA 319
 LOC103300075 114 GGCTCTTGTATGAATTTAGAGTTCCTAGACACAAAACTCAATGTGGGCATACACAACCTACTGGCCTATGTGAAACACCTGA 193
 H. sapiens IFIT1B 114 GATCTGGAGAGAGATTCAGTTCTTGCACACCAAAATCAATGTGGGATATACACAACCTACTAGCCTATGTGAAACACCTGA 193

LOC103296399 320 ATGGCCAGAATCAGGAAGCCCTGGAGAGCTTGAAAGGAAGCTGAAGACTTAATGCAGGCAGGCACATCCGCCAGTCAGAC 399
 LOC103300075 194 ATGGCCAGAATCAGGAAGCCCTGAAGAGCTTGAAAGGAAGCTGAAGACTTAATGCAGGCAGGAACATGTTGCCAGTCAGAC 273
 H. sapiens IFIT1B 194 AAGGCCAGAATCAGGAAGCCCTGCTAGCTTGAAAGAGGCTGAAGACTTAATTCAGAAAGAACATGCCAACCAAGCAGAT 273

LOC103296399 400 GCGATAAAGCTGGTTACCTGGGGCAACTATGCCTGGCTGTATTACCACATGGACAGGCTGGCGGACGCCAGATTTACCT 479
 LOC103300075 274 GCGATAAAGCTGGTTACCTGGGGCAACTATGCCTGGCTGTATTACCACATGGACAGGCTGGCGGACGCCAGATTTACCT 353
 H. sapiens IFIT1B 274 ATTCAGAGTCTGGTACCTGGGGCAACTTTCCTGGCTGTATTACCACATGGCAGATTTGGCAAGACCCAGACTTACCT 353

LOC103296399 480 GGACAAGGTGGAGAGCACTTGCAAAAAGTTTCCAGCCCTCCTGCTACACAATGGAGTGGCCTGAGATGGACTGTAAAG 559
 LOC103300075 354 GGACAAGGTGGAGAGCACTTGCAAAAAGTTTCCAGCCCTCCTGCTACACAATGGAGTGGCCTGAGATGGACTGTGCCG 433
 H. sapiens IFIT1B 354 GGACAAGGTGGAGAACTACTTGCAGCAAGTTTGCAGATCTTCCCTCTATGAAGTGGAGTTCAGAGCTGGACTGTGAGG 433

LOC103296399 560 AAGGATGGGCCTTGTGAAATGTGGAGGAAAGAATTACGAACGGCTAAAGCCTGCTTTGAGAAGGCTCTGGAAGTGGAC 639
 LOC103300075 434 AAGGATGGGCCTTGTGAAATGTGGAGGAAAGAATTATGAACGGGCTAAAGCCTGCTTTGAGAAGGCTCTGGAAGTGGAC 513
 H. sapiens IFIT1B 434 AAGGATGGGCCTTGGGAAGCTGTGGTGGAAAGAATTATGAACGGGCTAAAGCCTGCTTTGAAGAAGGCTCTGGAAGTGGAC 513

LOC103296399 640 CCTGAAAACCTGAAATTCAGCACTGGGTATGCAATTTGTGTCTATCGTCTGGATGGCTTTAAACAAAACACCACCTCTCTCG 719
 LOC103300075 514 CCTGAAAACCTGAAATTCAGCACTGGGTATGCAATTTGTGTCTATCGTCTGGATGGCTTTAAACAAAACACCACCTCTCTCG 593
 H. sapiens IFIT1B 514 CCTGAAAACCTGAAATTCATTACTGGGTATGCAATTCACCTGCTATCCCTCTGGATAAATTAACACACCAATCAGGAGGAA 593

LOC103296399 720 TAAGACATTTTGTGTGACAGCCCTTAAACGGGCCATCAGGCTAAATCCAGGAGATGGGTATATTAATTAAGTCTCTCTCGGCA 799
 LOC103300075 594 TGAGGCATTTTGTGTGACAGCCCTTAAACGGGCCATCAGGCTAAATCCAGAGATGCATATTAATTAAGTCTCTCTCTGGTG 673
 H. sapiens IFIT1B 594 TAAGGCATTTTCTCTGCACTGCTTAAACAGAGCTTCAGGCTAAATCCAGATGATGTATATTAATTAAGTCTCTCTCTGGTC 673

LOC103296399 800 TGAAACTTCAGAAATATAGGACAACAAAGCTGAGGGAGAAAAGTACATTGAAGAAGCACTGGCCAACATGTCTTCGAGGACC 879
 LOC103300075 674 TGAAACTTCAGGAGATAGGACAAGAAAGCTGAGGGAGAAAAGTACATTGAAGAAGCACTGGCCAACATGTCTTCGAGAGCT 753
 H. sapiens IFIT1B 674 TGAACTTCAGGATGAGGACAAGAAAGCTGAGGAGAAAAGTACATTGAAGAAGCTCTGACCAAGTATATCTTCACAGGCC 753

LOC103296399 880 TATGTCCTTTCGATATGCGGCCAAGTTTAAACGAAAAAGGGCTCTTTAGATGATAAAGCTCTTAAACAAATGGCTTT 959
 LOC103300075 754 TATGTCCTTTCGATATGCGGCCAAGTTTAAACGAAAAAGGGCTCTTTAGATGATAAAGCTCTTAAACAAATGGCTTT 833
 H. sapiens IFIT1B 754 TATGTCCTTTCATATGCAAGCAAGTTTATCGAAAGAAAGGCTCTCTGATGATAAAGCTCTTCAAGCTCTTAAACAAATGGC 833

LOC103296399 960 GCAGGCAACACCTTCTCTGCTCTCTGTCATCACCAGATAGGGCTTTGCTATAGAGCACAAAGTCCATAAATAAACAAAG 1039
 LOC103300075 834 GCGGGCAACACCTTCTCTGCTCTCTGTCATCACCAGATAGGGCTTTGCTACAGATCACAAACATATCTTAATAAACAAAG 913
 H. sapiens IFIT1B 834 GGAGCAACACCTCACTTCTGCTCTCTGTCATCACCAGATAGGGGCTTTGCTACAGGGCACAAATGATCCAAATCAAGGAAG 913

LOC103296399 1040 CTACAACTGGGAGCCTAGAGGACCGGATAGAGAAAAATCGACAGAATAACAAAATTAGCCATATCTCATTTTGAATTT 1119
 LOC103300075 914 CTTCAAACCTGGGAGCCTAGAGGACCGGATAGAGAAAAATCGACAGAATAACAAAATTAGCCATATCTCATTTTGAATTT 993
 H. sapiens IFIT1B 914 CTACAACTGGGAGCCTAGAGGACCAAGATAGGAAACTGTTGACAGATTGGTTCAATTGGCTATATGCAATTTGAAAG 993

LOC103296399 1120 GCTGTGGAACAAAAGCCAACATTGGAAGTTGCTTATACACACCTAGCAGATATGTAATCTTTGCAGGCAATAGCAGAAA 1199
 LOC103300075 994 GCTGTGGAACAAAAGCCAACATTGGAATTTGCTTATATACACCTAGCAGATATGTAATCTTTGCAGGCAACATAGAAA 1073
 H. sapiens IFIT1B 994 ACTATTAATGTTAAAGGCAACATTGGAATGCTGCTATGTTGACCTGGCTGAATCCTATGCAAGAAATAGGCCAGCAGCAAAA 1073

LOC103296399 1200 AGCTGAAGAGACTTATCAAAAAGTGTCTGTCATGAAATCACTGAAGAAGAAAATAATGCAAGAGATATATTCCAGCAAG 1279
 LOC103300075 1074 AGCTGAAGAGACTTATCAAAAAGTGTCTGTCATGAAATCACTGAAGAAGAAAATAATGCAAGAGATATATTCCGCTATG 1153
 H. sapiens IFIT1B 1074 GCTGAGGAGACATTTTCAGAAAAGGTTTACGTCATGAAGATCTTTGAAGATCAGCTAAAGCAAGAGATTCATTACCCTACG 1153

LOC103296399 1280 GTCGATTTTCAGGAATTTAAAGGAAATCTGAAGTCGATGCAATTTATCTATTATTTAAAGCAATCAAAATAGAAAAAGCCA 1359
 LOC103300075 1154 GTCGATTTTCAGGAATTTCAAGGAAATCTGAAGTCGATGCAATTTATCTATTATTTAAAGCAATCAAAATTAAGAAAAAGCA 1233
 H. sapiens IFIT1B 1154 GCTCTTTTCAGAAACATCTGGAAGATCTCAAGATAAGCAATTAAGCTATTATTTAAAGGTTTGAAGAAATAGAAAAATG 1233

LOC103296399 1360 TCACTGTAAGAGACAGAAGTATCACTTCTCTGGAGAGAGTGGTTTAAAGGAACTTCAAGAAACCCAGTAGACATAGA 1439
 LOC103300075 1234 TCTCTGTAAGAGACAGAAGTATCACTTCTCTGGAGAGAGTGGTTTAAAGGAACTTCAAGAAACCCAGTAGACATAGA 1310
 H. sapiens IFIT1B 1234 TCCATTCCAGGGAAGAACTTCTCAATGCTTTAGAGAAATTTGGCTAAAGATGTATTCACCAAGATGTATCCGCTTGTGGA 1313

LOC103296399 1440 AAGCTTGAGCATCCTTGGGTTTACCTACAAAATGAAAGGAGAAAATGAATAAGCCCTGGAGTACTATGAGCGGGCCCTGA 1519
 LOC103300075 1311 AAGCTTGAGCATCCTTGGGTTTACCTACAAAATGAAAGGAGAAAATGAATAAGCCCTGGAGTACTATGAGCGGGCCCTGA 1390
 H. sapiens IFIT1B 1314 AAGTGTTCAGCTTCCTTGGGCTTATTCACAAAATGAAAGGAGAAAATGAATGATGCTTTGCTGTCTATGAGAGGGGCTCTGA 1393

LOC103296399 1520 GGCTGGCTGCTGACTTTGAGAACCTGTGGGACACGCTCCTTAG 1563
 LOC103300075 1391 GGCTGGCTGCTGACTTTGAGAACCTGTGGGACACGCTCCTTAG 1434
 H. sapiens IFIT1B 1394 GGCTGGCTGCTGACCTTGAACCTTATTTTAA 1425

Supplementary Figure 11. Gene alignment of *E. fuscus* and human *IFIT1B*. Grey boxes indicate identical residues. ClustalW alignment was generated using MacVector software. Two uncharacterized genes (LOC103296399 and LOC103300075) were identified to be orthologous to human *IFITB*.

P. alecto IFIT1 1 ATGAGTAA GAATGCTGATGAAGATCAGGTCAAAGATAGCTGGAGCAATGAGATGTCACTTTACATGGAAGTTGCTAAT 80
H. sapiens IFIT1 1 ATGAGTAA CAATGCTGATGATATCAGGTCAAAGATAGCTGGAGCAATGAGATGTCACTTTACATGGAAGTTATCCAT 80

P. alecto IFIT1 81 CGAAGACACTGAAATTAACGATTAGAAAACAGGGTTTTCGATGAGATTGAATTCCTAGACATCAAATACACGTGGGAA 160
H. sapiens IFIT1 81 TGATGACGATGAAATGCCGTGATTAGAAAACAGAGTCTTGATCAGATTGAATTCCTAGACATCAAATACAGTGTGGGAA 160

P. alecto IFIT1 161 TTTACCAACCTACTGCCTATATTAAGCACCTGAAAGGCCAATAAGGAAGCCCTGAGAGCTTGAAGAAGCTGAAACC 240
H. sapiens IFIT1 161 TACCAACCTACTAGCCTATGTGAAACACCTGAAAGGCCAAGATGAGGAAGCCCTGAGAGCTTGAAGAAGCTGAAACC 240

P. alecto IFIT1 241 TTAATCAGCAAGAAGCTTACCAACCAATCGAACACAAAGAGCTGGTTACCTGGGGCAACTATGCCTGGCTGTATTACCA 320
H. sapiens IFIT1 241 TTAATGCAAGGAAGAACATGACCAACCAAGCAATGTGAGGAGCTGGTTACCTGGGGCAACTATGCCTGGATGTATTACCA 320

P. alecto IFIT1 321 CATGGGCAGCTGGCGAGAAGTCCAGATTATCTGGACAAAGTGGAAACACTTGCAAGAAGCTTGCAGTCCCTCTCGCT 400
H. sapiens IFIT1 321 CATGGGCAGACTGGCGAGAAGTCCAGATTATCTGGACAAAGTGGAAACACTTGCAAGAAGCTTGCAGTCCCTCTCGCT 400

P. alecto IFIT1 401 GTAGACTGGAGTGTCTGAGATGGACTGTGAGGAAGGATGGCCCTTGCTGAAATGTGGAGGAAAAGATTAGAACGAGCC 480
H. sapiens IFIT1 401 ATAGAAATGGAGTGTCCAGAAATAGACTGTGAGGAAGGATGGCCCTTGCTGAAATGTGGAGGAAAAGATTAGAACGAGCC 480

P. alecto IFIT1 481 AAGGCCTGCTTTGAAAAGGCTCTGGAAGCGGACCTGAAAACCTCGAATTCAACCTGGGTATGCGATCATGCTTTTCG 560
H. sapiens IFIT1 481 AAGGCCTGCTTTGAAAAGGTGCTTGAAAGTGGACCTGAAAACCTCGAATCCAGCGCTGGGTATGCGATCTGTGCTTTTCG 560

P. alecto IFIT1 561 TCTGGATAGCTTTCAAAAGAAAGCGCAATTTAAAGAGCCATTTTCTCTACACCCCTAAAGCAGGCATCAGCTTAAATC 640
H. sapiens IFIT1 561 CTTGGATGCTTTTAATTAGCCAGAAATAATCAAGCCATTTTCTTTGCTTCCCCTAAAGCAGGCTGTGCTTAAATC 640

P. alecto IFIT1 641 CGGAAGATGCATATATTAAGGCTCTCCTTGGCCTGAAGCTTCAGGATGAGGAAGAACAGCTGAGGAGAAAAGTACATT 720
H. sapiens IFIT1 641 CAGACAATGCATATATTAAGGCTCTCCTTGGCCTGAAGCTTCAGGATGAGGAAGAACAGCTGAGGAGAAAAGTACATT 720

P. alecto IFIT1 721 GAAGAAGCACTGACCAAAATGTGCTGCAGACCTATGCTTTTCGCTATGCAGCCATGTTTTACCGAAGAAAAGGCTCTGT 800
H. sapiens IFIT1 721 GAAGAAGCTCTAGCCAAATGTGCTGCAGACCTATGCTTTTCGATATGCAGCCATGTTTTACCGAAGAAAAGGCTCTGT 800

P. alecto IFIT1 801 GGATAAAGCGCTTCAGCTCTTAAAAAAGCTTTGCGAGGCAACACCCCTCTTCTGCTTCTCATCACCAGATAGGGCTTT 880
H. sapiens IFIT1 801 GGATAAAGCTCTTCAGTATATAAAAAGGCTTTGCGAGGCAACACCCATCTTCTGTCTTCTCATCACCAGATAGGGCTTT 880

P. alecto IFIT1 881 GCTACAGATCACAAGTTCTCGTCAAAATAAGAAAGCTGCAAAATGGCAGCCTAGAGGACAGATAGAGAAAAATGTAATAGA 960
H. sapiens IFIT1 881 GCTACAGAGCACAAGTTGATCAAAATCAAGAGGCTACAAAAGGCAGCCTAGAGGACAGATAGAGAAAAATGTAATAGA 960

P. alecto IFIT1 961 ATAAACAAGATTAGCCATATTTTCAATTTGAATTCAACCTGAACAAAAGCCACATTTGAGATTAGCTTACAAACACCTGGC 1040
H. sapiens IFIT1 961 ATGATAAGATCAGCCATATTTTCAATTTGAATCTGACCTGGAACAAAAGCCACATTTGAGATTAGCTTACAAACACCTGGC 1040

P. alecto IFIT1 1041 AGATATGTACATAGAAGCAGGCAACTATGAAAAAGCTGAAGACCTTATCAAAAAAGTGTATGCTGAAAAACCTTTGACA 1120
H. sapiens IFIT1 1041 AAGATATGTATATAGAAGCAGGCAACTACAGAAAAAGCTGAAGACATTTTCAAAAAAGTGTATGCTGAAAAACCTTTGAGT 1120

P. alecto IFIT1 1121 AAGAAAGTTCTGCAAGAAATAATATTCTACTATGGCCAAATTCAGGAATTTCAAAAGAAATCTGAATCGATGCAATTATC 1200
H. sapiens IFIT1 1121 AAGAAACAATGCAAGACATACTTTCTACTATGGTGGTTTCAGGAATTTCAAAAGAAATCTGACCTCATGCAATTATC 1200

P. alecto IFIT1 1201 TATTATTTAAAAGCAATAAAAAATAGAAACCCAGTCATATTCAAGAGATAAAAGTATCAATCTTTTGAGAAATTGGTTTT 1280
H. sapiens IFIT1 1201 CATTATTTAAAAGCTATAAAAAATAGAAACGGCATATTCAAGAGATAAAAGTATCAATCTTTTGAGAAATTGGTTTT 1280

P. alecto IFIT1 1281 AAGGAACTTCGGAGAAAATGATTCAGACATAGAAAGCTTGAGCATCCTCGGGTTCATCTACAAATTGAAGGAGAAATAGA 1360
H. sapiens IFIT1 1281 AAGGAACTTCGGAGAAAATGATTCAGACATCTGAAAGCTTGAGCATCCTCGGGTTCATCTACAAATTGAAGGAAATAGA 1360

P. alecto IFIT1 1361 ATGAAGCCTTGGAGTATTAAGAGGAGGCCCCAAGCTGGCTGCTGACTTTGAGAGCTTTGTGTGA 1425
H. sapiens IFIT1 1361 ATGAAGCCTTGGAGTATTAAGAGGAGGCCCCAAGCTGGCTGCTGACTTTGAGAGCTTTGTGTGAGACAAGGTCCTTAG 1437

Supplementary Figure 12. Gene alignment of *P. alecto* and human *IFIT1*. Grey boxes indicate identical residues. ClustalW alignment was generated using MacVector software.

A

P. alecto IFIT1	1	MSKNAEDQVKDRLEQLRCHFTWKLLLETFEITDLENRVFDEIEFLDIKYNVGIHNLLAYIKHLKGONKEALESLKEAET	80
H. sapiens IFIT1	1	MSTNGEDHQVKDSLEQLRCHFTWELSLIDDEMPDLENRVLDQIEFLDTKYSVGIHNLLAYVKHLKGONEEALKSLKEAEN	80
P. alecto IFIT1	81	LIQQERTNQSNITKRLVTWGNYYAWLYYHMGSLGVEVQIYLDKVENTCKKLASPSCCRLECEPEMDCEEGWALLKCGGKNYERA	160
H. sapiens IFIT1	81	LMQEHHDNQANVRS LVTWGNFAWYMYHMGRLAEAQTYLDKVENTCKKLSPFRYRMCEPEIDCEEGWALLKCGGKNYERA	160
P. alecto IFIT1	161	KACFEKALEADPENPEFNTGYAITMFRDLSFHKETQFKEAFSLHPLKQAIRLNPEDATYKALLGLKLQDVVEQAEGQKYI	240
H. sapiens IFIT1	161	KACFEKVLVLDPENPESSAGYAISAYRLDGFKLATKNHKPFSLLPLRQAVRLNPDNGYIKVLLALKLQDEGEQAEGEKYI	240
P. alecto IFIT1	241	EEALTKMSSQTYVFRYAAMFYRRKGSVDKALQLLKTALQATPSSAF LHHQIGLCYRSQVVRQIKKTAMWQPRGQDRENVNR	320
H. sapiens IFIT1	241	EEALANMSSQTYVFRYAAMFYRRKGSVDKALQLLKKALQETPTSVL LHHQIGLCYKACMIQIKKEATKQPRGQNRKLDK	320
P. alecto IFIT1	321	ITRLAIFHFEFTLKQKPTFEIAYKHLADMYIEAGNYEKAEEDTYQKVRRLKKLDKEVLQETIYYQQFOEFQRKSEIDAI	400
H. sapiens IFIT1	321	MIRSLAIFHFEFAVEKKPTFEVAHLDLARMYIEAGNHRKAEENFQKLLCMKPVVEETMDIHHEHYGRFOEFQRKSDVNAII	400
P. alecto IFIT1	401	YYLKAIKIENQSYSRDKSISLEKLVLRKLRRNGSDIESLSILGFIYKIKGEMNEALEEYEBALKLAADFESFV	474
H. sapiens IFIT1	401	HYLKAIKIEQASLTDRDKSINSIKKLVLRKLRRKALDLESLSILGFVYKLEGNMNEALEEYERALKLAADFENSVRQGP	478

B

P. alecto IFIT3	1	MSEVS SSKNSLEKILPQLKCHFTWNLFQKDSLSHDLDRVRNQIEFLNTECKATTYNLLAYIKHLHQNNEAALEYLQQAEE	80
H. sapiens IFIT3	1	MSEVT -KNSLEKILPQLKCHFTWNLFKEDSVSRDLDRVCNQIEFLNTEFKATMYNLLAYIKHLDNNEAALECLRQAEE	79
P. alecto IFIT3	81	LIQRERTDQVEIRSLVTWGNYYAWYYHLGRFSEAQVYVDKVKHLCEKFSNPYSIECEPELDSEEGWTLQCGGKNERAKV	160
H. sapiens IFIT3	80	LIQRERHADAQAEIRSLVTWGNYYAWYYHLGRLSDAQIYVDKVKQTCKKFSNPYSIEYSELDCEEGWTLQKCGGKNERAKV	157
P. alecto IFIT3	161	CFEKALEEKFNPEFSSGLAIAMYCLDDKFPQKQCSVSVLQKAIELSPDNQYIKVLLALKLQKINKEAEGEPVIEALEKA	240
H. sapiens IFIT3	158	CFEKALEEKFNPEFSSGLAIAMYHLDNHPEKQFSTDLQKAIELSPDNQYIKVLLGLKLQKMNEAEGEQFVEALEKS	237
P. alecto IFIT3	241	PCQTDILHSAAKFYQKKGDLDAIELLKKALESMFNNSHLCYLISGICYTAKVRQIENTGYSNASWNRKEIEELSKYARDY	320
H. sapiens IFIT3	238	PCQTDVILRSAAKFYRRKGDLDAIELFQRVLESTPNNGYLYHQIGCCYKAKVRQMONTGESEASGNKEMIEALKQYAMDY	317
P. alecto IFIT3	321	SEKAIIEKVLNPLNAYSDLAEP-ETECYQTA FNKELPNAEMKQFHQLSCNFOEYH GKSEDTPVQHYLKDLSISIKSTEKEK	399
H. sapiens IFIT3	318	SNKALEKGLNPLNAYSDLAEFLETECYQTPFNKEVPDAEKQSHQRYCNLQKYNKGSEDTAVQHGLEGLSISIKKSTDKEE	397
P. alecto IFIT3	400	EKCQPQNVAAENQLPQNAPNSWYLOGLIHKKNGLYLLQAAECFEKELGRLLRDSFSGTSSSIFLPASELKEGSEEVGGGADSS	479
H. sapiens IFIT3	398	IKDQPQNVSENLQPQNAPNYWYLOGLIHKQNGDLLQAAKCYEKELGRLLRDAFSGTSSSIFLPASELEDGSEEMGGGAVSS	477
P. alecto IFIT3	480	T L R E L P D P	487
H. sapiens IFIT3	478	S P R E L L S N S E Q L N	490

Supplementary Figure 13. Amino acid sequence comparison of human and *P. alecto* IFIT1 and IFIT3. Grey boxes indicate identical residues. ClustalW alignment was generated using MacVector software for IFIT1 (A) and IFIT3 (B).

P. alecto	1	MSKNADEQV	KDRLEQLRCHFTWKLLIEDTEIT	DLENRVFDEIEFLDI	KYNVGIHNLAYI	KHLKGQNK	EAL	ESLKEAE	T	80		
P. vampyrus	1	MSKNADEQV	KDRLEQLRCHFTWKLLIEDTEIT	DLENRVFDEIEFLDI	KYNVGIHNLAYI	KHLKGQNK	EAL	ESLKEAE	T	80		
R. aegyptiacus	1	MSKNADEQV	KDRLEQLRCHFTWKLLIEDTEIT	DLENRTFDEIEFLDI	KHNVGIHNLAYI	KHLKGQNK	EAL	ESLKEAE	T	80		
P. mesoamericanus	1	MSKSADQV	KDRLEQLRCHFTWKLVIDEAVP	DLENRVFDEIEFLDTKFNV	AIHNLAYVKHL	LTGQNK	EAL	QSLKAAED		80		
R. ferrumequinum	1	MSKTTAEDK	IKDGLDQLRCHFTWNLIEDTEMT	DLENRVFDEIEFLDTKFNV	IHNLLAYVKHLKGQNK	EAL	ESLKEAE	T	80			
A. jamaicensis	1	MSENSEEDQ	LKDRLEQLRCHFTWFLIEDVEI	DLENRIYNSQIEFLDTKFNV	AHNLAYVKHLKGQNK	EAL	QSLKQAE	D	80			
S. hondurensis	1	MSKNSEEDQ	LKDRLEQLRCHFTWFLIEDVEI	DLENRIYNSQIEFLDTKFNV	AHNLAYVKHLKGQNK	EAL	QSLKQAE	D	80			
P. hastatus	1	MSKTSSEEDQ	LKDRLEQLRCHFTWFLIEDVEI	DLENRVFDEIEFLDTKFNV	AHNLAYVKHLKGQNK	EAL	QSLKQAE	D	80			
P. discolor	1	MSKTSKEDQ	LKDRLEQLRCHFTWFLIEDVEI	DLENRVFDEIEFLDTKFNV	AHNLAYVKHLKGQNK	EAL	QSLKQAE	D	80			
D. rotundus	1	MSKNSEEDQ	LKDRLEQLRCHFTWFLIEDVEI	DLENRVFDEIEFLDTKFNV	AHNLAYVKHLKGQNK	EAL	QSLKQAE	D	80			
E. fuscus	1	MSMNADEQ	IQARLEQLRCHFTWKLHIEDTELS	DLENRVFDEIEFLDTKFNV	IHNLLAYVKHL	NGQNK	EAL	QSLKAAED		80		
M. brandtii	1	MSDELNDKLI	EDKLVQLRCHFTWKLHIEDTELS	DLENRVFDEIEFLDTKFNV	IHNLLAYVKHL	NGHKN	EAL	ESLKEAE	D	80		
M. molossus	1	MSKNADEQ	IKARLEQLRCHFTWKLHIEDTELS	DLENRVFDEIEFLDTKFNV	IHNLLAYVKHLKGQNK	EAL	ESLKEAE	D	80			
M. natalensis	1	MGKNADEQ	IKARVEQLRCHFTWKLHIEDTELS	DLENRVFDEIEFLDTKFNV	IHNLLAYVKHL	NGQNK	EAL	QSLKEAE	H	80		
P. kuhlii	1	MSVNADEQ	VRAKLEQLRCHFTWNLIEDTELS	DLENRVFNEIEFLDTKFNV	IHNLLAYVKHL	NGHKN	EAL	ESLKEAE	D	80		
H. sapiens	1	MSTNGDDH	VKDSLEQLRCHFTWELSLDDDEMP	DLENRVLDQIEFLDTKYSV	GIHNLAYVKHLKGQNK	EAL	ESLKEAE	N	80			
P. alecto	81	LIQOERTNQ	SNTKRLVTWGNyawlyyhmgs	CEVQIYLDKVENTCKKL	LASPS	CRLE	CE	PEMDCEE	GWALLKCGGKNYERA	160		
P. vampyrus	81	LIQOERTNQ	SNTKRLVTWGNyawlyyhmgs	CEVQIYLDKVENTCKKL	LASPS	CRLE	CE	PEMDCEE	GWALLKCGGKNYERA	160		
R. aegyptiacus	81	LIQOERTNQ	SNTKRLVTWGNyawlyyhmgs	CEVQIYLDKVENTCKKL	LASPS	CRLE	CE	PEMDCEE	GWALLKCGGKNYERA	160		
P. mesoamericanus	81	LIQTEHARQ	SDVRRRLVTWGNyawlyyhmgs	CEVQIYLDKVENTCKKL	LASPS	CRLE	CE	PEMDCEE	GWALLKCGGKNYERA	160		
R. ferrumequinum	81	LIQOEHANQ	SDVRRRLVTWGNyawlyyhmgs	CEVQIYLDKVENTCKKL	LASPS	CRLE	CE	PEMDCEE	GWALLKCGGKNYERA	160		
A. jamaicensis	81	LSQTEHAGQ	SDVRRRLVTWGNyawlyyhmgs	CEVQIYLDKVENTCKKL	LASPS	CRLE	CE	PEMDCEE	GWALLKCGGKNYERA	160		
S. hondurensis	81	LRQTEHVGQ	SEVRRRLVTWGNyawlyyhmgs	CEVQIYLDKVENTCKKL	LASPS	CRLE	CE	PEMDCEE	GWALLKCGGKNYERA	160		
P. hastatus	81	LVQTEBDDQ	AHVRRRLVTWGNyawlyyhmgs	CEVQIYLDKVENTCKKL	LASPS	CRLE	CE	PEMDCEE	GWALLKCGGKNYERA	160		
P. discolor	81	LIQTEBDDQ	AHVRRRLVTWGNyawlyyhmgs	CEVQIYLDKVENTCKKL	LASPS	CRLE	CE	PEMDCEE	GWALLKCGGKNYERA	160		
D. rotundus	81	LIQOEHADQ	SEVRRRLVTWGNyawlyyhmgs	CEVQIYLDKVENTCKKL	LASPS	CRLE	CE	PEMDCEE	GWALLKCGGKNYERA	160		
E. fuscus	81	LMQAEHAGQ	SDAIVLTWGNyawlyyhmgs	CEVQIYLDKVENTCKKL	LASPS	CRLE	CE	PEMDCEE	GWALLKCGGKNYERA	160		
M. brandtii	81	LMQAGHI	IPQSDAIVLTWGNyawlyyhmgs	CEVQIYLDKVENTCKKL	LASPS	CRLE	CE	PEMDCEE	GWALLKCGGKNYERA	160		
M. molossus	81	LIQTEHAGQ	SDVSLVNWGNyawlyyhmgs	CEVQIYLDKVENTCKKL	LASPS	CRLE	CE	PEMDCEE	GWALLKCGGKNYERA	160		
M. natalensis	81	LMQAGHADQ	SDVRLVNWGNyawlyyhmgs	CEVQIYLDKVENTCKKL	LASPS	CRLE	CE	PEMDCEE	GWALLKCGGKNYERA	159		
P. kuhlii	81	LMQAEHADQ	SDAIELVTWGNyawlyyhmgs	CEVQIYLDKVENTCKKL	LASPS	CRLE	CE	PEMDCEE	GWALLKCGGKNYERA	160		
H. sapiens	81	LMQAEHDH	QANVRSLVTWGNyawlyyhmgs	CEVQIYLDKVENTCKKL	LASPS	CRLE	CE	PEMDCEE	GWALLKCGGKNYERA	160		
P. alecto	161	KACFEKALE	ADPENPEFNTGYAI	TMFRLDS	FFHKE	TFKE	EAFS	LHPLK	QAIRLNPEDAYIKALL	GLKLQDVGE	EAEGQKYI	240
P. vampyrus	161	KACFEKALE	VDPENPEFNTGYAI	TMFRLDS	FFHKE	TFKE	EAFS	LHPLK	QAIRLNPEDAYIKALL	GLKLQDVGE	EAEGQKYI	240
R. aegyptiacus	161	KACFEKALE	VDPENPEFNTGYAI	TMFRLDS	FFHKE	TFKE	EAFS	LHPLK	QAIRLNPEDAYIKALL	GLKLQDVGE	EAEGQKYI	240
P. mesoamericanus	161	KACFEKALE	VDPENPEFNTGYAI	AVYRLDGF	FNTP	QDKT	FLHI	LKRAI	RLNPEDAYIKALL	GLKLQDVGE	EAEGQKYI	240
R. ferrumequinum	161	KACFEKALE	VDPENPEFNTGYAI	AVYRLDGF	FNTP	QDKT	FLHI	LKRAI	RLNPEDAYIKALL	GLKLQDVGE	EAEGQKYI	240
A. jamaicensis	161	KACFEKALE	VDPENPEFNTGYAI	AVYRLDGF	FNTP	QDKT	FLHI	LKRAI	RLNPEDAYIKALL	GLKLQDVGE	EAEGQKYI	240
S. hondurensis	161	KACFEKALE	VDPENPEFNTGYAI	AVYRLDGF	FNTP	QDKT	FLHI	LKRAI	RLNPEDAYIKALL	GLKLQDVGE	EAEGQKYI	240
P. hastatus	161	KACFEKALE	VDPENPEFNTGYAI	AVYRLDGF	FNTP	QDKT	FLHI	LKRAI	RLNPEDAYIKALL	GLKLQDVGE	EAEGQKYI	240
P. discolor	161	KACFEKALE	VDPENPEFNTGYAI	AVYRLDGF	FNTP	QDKT	FLHI	LKRAI	RLNPEDAYIKALL	GLKLQDVGE	EAEGQKYI	240
D. rotundus	161	KACFEKALE	VDPENPEFNTGYAI	AVYRLDGF	FNTP	QDKT	FLHI	LKRAI	RLNPEDAYIKALL	GLKLQDVGE	EAEGQKYI	240
E. fuscus	161	KACFEKALE	VDPENPEFNTGYAI	AVYRLDGF	FNTP	QDKT	FLHI	LKRAI	RLNPEDAYIKALL	GLKLQDVGE	EAEGQKYI	240
M. brandtii	161	KACFEKALE	VDPENPEFNTGYAI	AVYRLDGF	FNTP	QDKT	FLHI	LKRAI	RLNPEDAYIKALL	GLKLQDVGE	EAEGQKYI	240
M. molossus	161	KACFEKALE	VDPENPEFNTGYAI	AVYRLDGF	FNTP	QDKT	FLHI	LKRAI	RLNPEDAYIKALL	GLKLQDVGE	EAEGQKYI	240
M. natalensis	160	KACFEKALE	VDPENPEFNTGYAI	AVYRLDGF	FNTP	QDKT	FLHI	LKRAI	RLNPEDAYIKALL	GLKLQDVGE	EAEGQKYI	239
P. kuhlii	161	KACFEKALE	VDPENPEFNTGYAI	AVYRLDGF	FNTP	QDKT	FLHI	LKRAI	RLNPEDAYIKALL	GLKLQDVGE	EAEGQKYI	240
H. sapiens	161	KACFEKALE	VDPENPEFNTGYAI	AVYRLDGF	FNTP	QDKT	FLHI	LKRAI	RLNPEDAYIKALL	GLKLQDVGE	EAEGQKYI	240
P. alecto	241	EEALTKMSS	QTYVFRYAAMFYRRKGS	VDKALQLLKTAL	QATPSSAFLHHQ	IGLCYRSQV	RIKKTAK	WQPRG	QDREN	VNR	320	
P. vampyrus	241	EEALTKMSS	QTYVFRYAAMFYRRKGS	VDKALQLLKTAL	QATPSSAFLHHQ	IGLCYRSQV	RIKKTAK	WQPRG	QDREN	VNR	320	
R. aegyptiacus	241	EEALTKMSS	QTYVFRYAAMFYRRKGS	VDKALQLLKTAL	QATPSSAFLHHQ	IGLCYRSQV	RIKKTAK	WQPRG	QDREN	VNR	320	
P. mesoamericanus	241	EEALTKMSS	QTYVFRYAAMFYRRKGS	VDKALQLLKTAL	QATPSSAFLHHQ	IGLCYRSQV	RIKKTAK	WQPRG	QDREN	VNR	320	
R. ferrumequinum	241	EEALTKMSS	QTYVFRYAAMFYRRKGS	VDKALQLLKTAL	QATPSSAFLHHQ	IGLCYRSQV	RIKKTAK	WQPRG	QDREN	VNR	320	
A. jamaicensis	241	EEALTKMSS	QTYVFRYAAMFYRRKGS	VDKALQLLKTAL	QATPSSAFLHHQ	IGLCYRSQV	RIKKTAK	WQPRG	QDREN	VNR	320	
S. hondurensis	241	EEALTKMSS	QTYVFRYAAMFYRRKGS	VDKALQLLKTAL	QATPSSAFLHHQ	IGLCYRSQV	RIKKTAK	WQPRG	QDREN	VNR	320	
P. hastatus	241	EEALTKMSS	QTYVFRYAAMFYRRKGS	VDKALQLLKTAL	QATPSSAFLHHQ	IGLCYRSQV	RIKKTAK	WQPRG	QDREN	VNR	320	
P. discolor	241	EEALTKMSS	QTYVFRYAAMFYRRKGS	VDKALQLLKTAL	QATPSSAFLHHQ	IGLCYRSQV	RIKKTAK	WQPRG	QDREN	VNR	320	
D. rotundus	241	EEALTKMSS	QTYVFRYAAMFYRRKGS	VDKALQLLKTAL	QATPSSAFLHHQ	IGLCYRSQV	RIKKTAK	WQPRG	QDREN	VNR	320	
E. fuscus	241	EEALTKMSS	QTYVFRYAAMFYRRKGS	VDKALQLLKTAL	QATPSSAFLHHQ	IGLCYRSQV	RIKKTAK	WQPRG	QDREN	VNR	320	
M. brandtii	241	EEALTKMSS	QTYVFRYAAMFYRRKGS	VDKALQLLKTAL	QATPSSAFLHHQ	IGLCYRSQV	RIKKTAK	WQPRG	QDREN	VNR	320	
M. molossus	240	EEALTKMSS	QTYVFRYAAMFYRRKGS	VDKALQLLKTAL	QATPSSAFLHHQ	IGLCYRSQV	RIKKTAK	WQPRG	QDREN	VNR	319	
M. natalensis	240	EEALTKMSS	QTYVFRYAAMFYRRKGS	VDKALQLLKTAL	QATPSSAFLHHQ	IGLCYRSQV	RIKKTAK	WQPRG	QDREN	VNR	319	
P. kuhlii	241	EEALTKMSS	QTYVFRYAAMFYRRKGS	VDKALQLLKTAL	QATPSSAFLHHQ	IGLCYRSQV	RIKKTAK	WQPRG	QDREN	VNR	320	
H. sapiens	241	EEALTKMSS	QTYVFRYAAMFYRRKGS	VDKALQLLKTAL	QATPSSAFLHHQ	IGLCYRSQV	RIKKTAK	WQPRG	QDREN	VNR	320	

*Supplementary Figure 14 continues on next page

P. alecto	321	I	T	R	L	A	I	S	H	F	E	F	T	L	K	Q	K	P	T	F	E	I	A	Y	K	L	A	D	M	Y	I	E	A	G	N	Y	E	K	A	E	D	T	Y	Q	K	V	L	R	L	K	L	D	K	E	V	L	Q	E	I	F	Y	F	Y	G	R	F	Q	E	F	Q	R	K	S	E	I	D	A	I	I	400	
P. vampyrus	321	I	T	R	L	A	I	S	H	F	E	F	T	L	K	Q	K	P	T	F	E	I	A	Y	K	L	A	D	M	Y	I	E	A	G	N	Y	E	K	A	E	D	T	Y	Q	K	V	L	C	L	K	L	D	K	E	V	L	Q	E	I	F	Y	F	Y	G	R	F	Q	E	F	Q	R	K	S	E	I	D	A	I	I	400	
P. aegyptiacus	321	I	A	N	L	A	I	S	H	F	E	F	T	L	K	Q	K	P	T	F	E	I	A	Y	K	L	A	D	M	Y	I	E	I	G	N	Y	E	K	A	E	D	T	Y	Q	K	V	F	S	M	K	T	L	D	K	D	I	L	Q	D	I	F	Y	F	Y	G	R	F	Q	E	F	Q	R	K	S	E	I	D	A	I	I	400
P. mesoamericanus	321	V	T	K	L	A	I	S	H	L	E	F	A	L	E	Q	K	P	T	M	E	I	A	Y	K	L	A	D	M	Y	S	E	A	G	N	Y	S	K	A	E	D	A	Y	K	T	V	L	S	M	K	S	Y	G	E	E	K	L	Q	E	I	F	Y	F	Y	G	R	F	Q	E	F	Q	R	K	S	E	I	D	A	I	I	400
P. ferrumequinum	321	I	T	R	L	A	I	S	H	F	E	F	A	L	E	Q	K	P	T	M	E	I	A	Y	K	L	A	D	M	Y	I	E	A	G	N	Y	G	K	A	E	D	T	Y	Q	K	L	L	C	L	S	L	E	E	O	N	L	Q	E	I	F	Y	F	Y	G	R	F	Q	E	F	Q	R	K	S	E	I	D	A	I	I	400	
A. jamaicensis	321	I	I	Q	L	A	I	S	H	F	E	F	A	L	E	Q	K	P	T	M	E	I	A	Y	K	L	A	D	M	Y	L	E	A	G	N	T	R	K	A	E	D	A	Y	K	T	V	F	S	M	K	S	V	E	E	K	L	Q	E	I	F	Y	F	Y	G	R	F	Q	E	F	Q	R	K	S	E	I	D	A	I	I	400	
S. hondurensis	321	I	V	R	M	A	I	C	E	F	K	K	A	L	E	L	R	P	G	H	M	V	I	D	L	A	E	M	Y	A	L	G	Q	H	R	E	A	E	D	I	F	Q	K	L	S	M	G	I	F	H	D	H	L	H	N	T	H	F	R	Y	G	R	F	Q	E	F	Q	R	K	S	E	I	D	A	I	I	400				
P. hastatus	321	I	I	K	L	A	I	S	H	L	E	F	A	L	E	Q	K	P	T	M	E	I	A	Y	K	L	A	D	M	Y	L	E	A	G	N	Y	R	K	A	E	D	A	Y	K	T	V	F	S	M	K	S	I	E	K	E	K	L	Q	D	M	F	H	Y	G	R	F	Q	E	F	Q	R	K	S	E	I	D	A	I	I	400	
P. discolor	321	I	I	K	L	A	I	S	H	L	E	F	A	L	E	Q	K	P	T	M	E	I	A	Y	K	L	A	D	M	Y	L	E	A	G	N	Y	R	K	A	E	D	A	Y	K	T	V	F	S	M	K	S	I	E	E	E	K	L	Q	D	M	F	H	Y	G	R	F	Q	E	F	Q	R	K	S	E	I	D	A	I	I	400	
D. rotundus	321	I	T	K	L	A	I	S	H	L	E	F	A	L	E	Q	K	P	T	M	E	I	A	Y	K	L	A	D	M	Y	L	E	A	G	N	Y	R	K	A	E	D	A	Y	K	T	L	F	S	M	K	S	L	E	E	E	K	L	Q	E	I	F	Y	F	Y	G	R	F	Q	E	F	Q	R	K	S	E	I	D	A	I	I	400
E. fuscus	321	I	T	K	L	A	I	S	H	F	E	F	A	L	E	Q	K	P	T	F	E	I	A	Y	K	L	A	D	M	Y	V	O	A	G	N	R	K	A	E	D	E	T	Y	Q	K	L	L	C	M	K	S	L	E	E	N	M	Q	E	I	F	Y	F	Y	G	R	F	Q	E	F	Q	R	K	S	E	I	D	A	I	I	400	
M. brandtii	321	K	T	K	L	A	I	S	H	F	E	F	A	L	E	Q	K	P	T	F	E	I	A	Y	K	L	A	D	M	Y	S	V	A	G	N	S	R	K	A	E	D	T	Y	Q	K	V	F	C	M	K	S	L	E	E	E	K	I	Q	E	I	F	Y	F	Y	G	R	F	Q	E	F	Q	R	K	S	E	I	D	A	I	I	400
M. molossus	321	T	I	R	L	A	I	S	H	F	E	F	A	L	E	Q	K	P	T	F	D	I	A	Y	K	L	A	D	M	Y	I	E	A	G	D	A	K	T	D	L	Y	Q	K	V	F	R	M	T	P	L	E	D	E	K	L	Q	E	I	L	H	H	G	R	Y	Q	E	F	Q	R	K	S	E	I	D	A	I	I	400			
M. natalensis	320	I	T	R	L	A	I	S	H	F	E	F	A	L	E	Q	K	P	T	F	E	V	A	I	K	L	A	D	M	Y	I	E	A	G	N	Y	R	K	A	E	D	A	Y	Q	K	L	S	M	K	S	L	K	E	E	T	L	Q	E	I	F	Y	F	Y	G	R	F	Q	E	F	Q	R	K	S	E	I	D	A	I	I	399	
P. kuhlii	321	I	T	K	L	A	I	S	H	L	E	F	A	L	E	Q	K	P	T	F	D	I	A	Y	K	L	A	D	M	Y	I	Q	A	G	S	Y	R	K	A	E	D	A	Y	Q	K	L	L	R	V	K	S	L	E	E	E	T	M	Q	E	I	F	Y	F	Y	G	R	F	Q	E	F	Q	R	K	S	E	I	D	A	I	I	400
H. sapiens	321	M	I	R	S	A	I	F	H	F	E	S	A	V	E	K	K	P	T	F	E	V	A	I	K	L	A	D	M	Y	I	E	A	G	N	H	R	K	A	E	N	F	Q	K	L	L	C	M	K	P	V	V	E	T	M	Q	E	I	F	Y	F	Y	G	R	F	Q	E	F	Q	R	K	S	E	I	D	A	I	I	400		

P. alecto	401	Y	L	K	A	I	K	I	E	N	Q	S	Y	S	R	D	K	S	I	S	L	E	K	L	V	R	K	L	R	R	N	G	S	D	I	E	S	L	S	I	L	G	F	I	Y	K	L	G	E	M	N	E	A	L	E	Y	Y	E	Q	A	L	K	L	A	D	F	E	S	F	V	474							
P. vampyrus	401	Y	L	K	A	I	K	I	E	N	Q	S	Y	S	R	D	K	S	I	S	L	E	K	L	V	R	K	L	R	R	N	A	S	D	I	E	S	L	S	I	L	G	F	I	Y	K	L	G	E	M	N	E	A	L	E	Y	Y	E	Q	A	L	N	L	A	D	F	E	R	F	473								
P. aegyptiacus	401	Y	L	K	A	I	N	I	E	N	Q	S	Y	S	R	D	K	S	I	S	L	E	K	L	V	R	K	L	R	N	A	S	D	I	E	S	L	S	I	L	G	F	I	D	K	L	G	E	I	N	E	A	S	F	S	D	E	R	A	L	K	L	A	D	F	E	S	S	V	G	L	K	477					
P. mesoamericanus	401	S	Y	L	K	A	I	T	I	E	K	P	S	F	S	R	D	K	S	I	S	A	L	E	K	L	V	R	K	L	Q	T	N	E	A	D	I	E	N	L	S	I	L	G	F	V	Y	K	S	R	G	E	M	N	K	A	L	E	Y	Y	E	Q	A	L	R	L	A	A	G	F	470							
R. ferrumequinum	401	Y	L	K	S	I	E	V	A	K	P	S	F	T	R	D	K	S	I	S	A	L	E	K	L	A	L	K	L	R	R	N	T	S	D	I	E	S	L	S	I	L	G	F	I	H	K	L	G	E	I	N	E	A	L	E	Y	Y	E	R	A	L	R	L	S	A	D	V	K	N	S	V	G	Y	D	W	478	
A. jamaicensis	401	Y	L	K	A	I	K	I	E	K	S	S	F	S	R	D	N	S	I	S	A	L	E	K	L	L	R	K	L	Q	R	N	E	A	D	V	E	S	L	S	I	L	G	F	V	Y	K	L	G	E	M	H	E	A	L	G	Y	Y	E	R	A	L	R	L	A	A	G	S	E	N	S	V	G	V	P	478		
S. hondurensis	401	H	Y	L	K	A	I	N	K	E	N	S	L	F	T	S	N	E	S	L	R	A	L	E	K	L	V	R	R	H	R	N	G	A	D	I	E	S	L	S	I	L	G	F	I	H	K	M	K	G	E	M	H	E	A	L	E	C	Y	E	Q	A	L	R	L	A	A	G	S	E	N	S	V	G	H	V	P	478
P. hastatus	401	Y	L	K	A	I	N	K	E	N	S	S	F	T	S	N	R	S	L	S	A	L	E	K	L	V	L	K	L	R	R	N	E	A	D	V	E	S	L	S	I	L	G	F	V	C	K	L	G	E	M	H	E	A	L	E	W	Y	E	R	A	L	K	L	A	A	S	E	N	S	V	G	H	V	P	478		
P. discolor	401	Y	L	K	A	I	K	I	E	K	S	T	F	S	R	E	N	S	L	S	A	L	E	K	L	V	R	K	L	R	R	N	G	A	D	I	E	S	L	S	I	L	G	F	V	Y	K	L	G	E	M	H	E	A	L	E	W	Y	E	R	A	L	R	L	A	A	G	S	E	N	S	V	G	R	V	P	478	
D. rotundus	401	Y	L	K	A	I	K	I	E	K	S	T	F	S	R	E	N	S	L	S	A	L	E	K	L	V	R	K	L	R	R	N	E	A	D	V	E	S	L	S	I	L	G	F	V	Y	K	L	G	E	M	H	E	A	L	E	Y	E	R	A	L	S	L	P	G	C	W	L	471									
E. fuscus	401	Y	L	K	A	I	K	I	E	K	P	S	-	L	R	D	R	S	I	S	L	E	K	L	V	R	K	L	Q	R	N	P	V	D	I	E	S	L	S	I	L	G	F	T	Y	K	L	G	E	M	N	K	A	L	E	Y	Y	E	R	A	L	R	L	A	D	F	E	N	P	V	G	H	A	P	477			
M. brandtii	401	Y	L	K	A	I	K	I	E	T	P	S	S	P	R	D	R	S	I	S	A	L	E	K	L	V	L	K	L	Q	R	N	A	E	D	M	E	S	L	G	I	L	G	E	I	Y	K	L	G	E	I	N	K	A	L	E	Y	E	R	A	L	R	L	A	D	469												
M. molossus	401	Y	L	K	A	I	K	I	E	P	T	V	Y	R	D	R	S	I	S	L	E	K	L	I	L	K	H	R	R	N	A	E	D	I	E	S	L	S	I	L	G	E	I	Y	K	L	G	E	M	N	K	A	L	E	C	Y	E	Q	A	L	R	L	A	N	E	469												
M. natalensis	400	Y	L	K	I	K	I	N	L	S	I	V	R	E	R	S	I	I	A	L	E	K	L	I	L	K	H	R	N	K	A	D	M	E	S	L	S	I	L	G	L	I	Y	K	L	G	E	M	N	K	A	L	E	Y	Y	E	R	A	L	R	L	A	A	G	F	E	N	S	V	G	H	V	P	477				
P. kuhlii	401	Y	L																																																																											

P. alecto	1		MSEV	S	KNSLEKILPQLKCHFTWNL	LFQKDS	LS	SHDLEDVR	RNQIEFLNTE	CKATT	YNLLAYIK	62																																																															
P. vampyrus	1		MSEV	-	KNSLEKILPQLKCHFTWNL	LFQKDS	LS	SHDLEDVR	RNQIEFLNTE	CKATT	YNLLAYIK	61																																																															
P. giganteus	1		MSEV	-	KNSLEKILPQLKCHFTWNL	LFQKDS	LS	SHDLEDVR	RNQIEFLNTE	CKATT	YNLLAYIK	61																																																															
R. aegyptiacus	1		MSEV	-	KNSLEKILPQLKCHFTWNL	LFQKDS	PS	SHDLEDVR	CNQIEFLNTE	EFKATM	YNLLAYIK	61																																																															
R. ferrumequinum	1		MSEVN	-	KNSLEKILPQLKCHFTWNL	LKFEES	V	SHDLE	ARVCNQIEFLNTE	EFKATM	YNLLAYIK	61																																																															
R. sinicus	1		MSEVN	-	KNSLEKILPQLKCHFTWNL	LKFEES	V	SHDLE	ARVCNQIEFLNTE	EFKATM	YNLLAYIK	61																																																															
A. jamaicensis	1	MHKQN	I	K	S	AVQN	S	R	E	T	A	I	79																																																														
S. hondurensis	1												63																																																														
P. hastatus	1												69																																																														
P. discolor	1												63																																																														
D. rotundus	1												61																																																														
E. fuscus	1												61																																																														
M. brandtii	1												61																																																														
M. myotis	1												61																																																														
M. davidii	1												61																																																														
M. lucifugus	1												61																																																														
M. molossus	1												61																																																														
M. natalensis	1												61																																																														
H. sapiens	1												61																																																														
P. alecto	63	HLHGQNEAALE	Y	LQ	Q	A	E	E	L	I	R	E	R	T	D	Q	V	E	I	R	S	L	V	T	W	G	N	Y	A	W	V	Y	H	L	G	R	F	S	E	A	Q	V	Y	D	K	V	H	L	C	E	F	S	N	P	Y	S	I	E	C	P	E	L	D	S	E	142									
P. vampyrus	62	HLHGQNEAALE	C	L	Q	A	E	E	L	I	R	E	R	T	D	Q	V	E	I	R	S	L	V	T	W	G	N	Y	A	W	V	Y	H	L	G	R	F	S	E	A	Q	V	Y	D	K	V	H	L	C	E	F	S	N	P	Y	S	I	E	C	P	E	L	D	S	E	141									
P. giganteus	62	HLHGQNEAALE	C	L	Q	A	E	E	L	I	R	E	R	T	D	Q	V	E	I	R	S	L	V	T	W	G	N	Y	A	W	V	Y	H	L	G	R	F	S	E	A	Q	V	Y	D	K	V	H	L	C	E	F	S	N	P	Y	S	I	E	C	P	E	L	D	S	E	141									
R. aegyptiacus	62	HLHGQNEAALE	C	L	Q	A	E	E	L	I	R	E	H	A	D	Q	V	E	I	R	S	L	V	T	W	G	N	Y	A	W	V	Y	H	L	G	R	F	S	E	A	Q	V	Y	D	K	V	H	L	C	E	F	S	N	P	Y	S	I	E	C	P	E	L	D	S	E	141									
R. ferrumequinum	62	HLHGQNEAALE	C	L	Q	A	E	E	L	I	R	E	H	A	D	Q	V	E	I	R	S	L	V	T	W	G	N	Y	A	W	V	Y	H	L	G	R	F	S	E	A	Q	V	Y	D	K	V	H	L	C	E	F	S	N	P	Y	S	I	E	C	P	E	L	D	S	E	141									
R. sinicus	62	HLHGQNEAALE	C	L	Q	A	E	E	L	I	R	E	H	A	D	Q	V	E	I	R	S	L	V	T	W	G	N	Y	A	W	V	Y	H	L	G	R	F	S	E	A	Q	V	Y	D	K	V	H	L	C	E	F	S	N	P	Y	S	I	E	C	P	E	L	D	S	E	141									
A. jamaicensis	80	HLHGQNEAALE	C	L	Q	A	E	E	S	I	Q	A	H	A	D	Q	V	E	I	R	S	L	V	T	W	G	N	Y	A	W	V	Y	H	L	G	R	F	S	E	A	Q	V	Y	D	K	V	H	L	C	E	F	S	N	P	Y	S	I	E	C	P	E	L	D	S	E	159									
S. hondurensis	64	HLHGQNEAALE	C	L	Q	A	E	E	S	I	Q	A	H	A	D	Q	V	E	I	R	S	L	V	T	W	G	N	Y	A	W	V	Y	H	L	G	R	F	S	E	A	Q	V	Y	D	K	V	H	L	C	E	F	S	N	P	Y	S	I	E	C	P	E	L	D	S	E	143									
P. hastatus	70	HLHGQNEA	T	A	L	E	C	L	Q	A	E	E	S	I	Q	A	H	A	D	Q	V	E	I	R	S	L	V	T	W	G	N	Y	A	W	V	Y	H	L	G	R	F	S	E	A	Q	V	Y	D	K	V	H	L	C	E	F	S	N	P	Y	S	I	E	C	P	E	L	D	S	E	149					
P. discolor	64	HLHGQNEAALE	C	L	Q	A	E	E	S	I	Q	A	H	A	D	Q	V	E	I	R	S	L	V	T	W	G	N	Y	A	W	V	Y	H	L	G	R	F	S	E	A	Q	V	Y	D	K	V	H	L	C	E	F	S	N	P	Y	S	I	E	C	P	E	L	D	S	E	143									
D. rotundus	62	HLHGQNEAALE	C	L	Q	A	E	E	S	I	Q	A	H	A	D	Q	V	E	I	R	S	L	V	T	W	G	N	Y	A	W	V	Y	H	L	G	R	F	S	E	A	Q	V	Y	D	K	V	H	L	C	E	F	S	N	P	Y	S	I	E	C	P	E	L	D	S	E	141									
E. fuscus	62	HLHGQNEA	E	A	L	E	C	L	Q	A	E	E	S	I	Q	A	H	A	D	Q	V	E	I	R	S	L	V	T	W	G	N	Y	A	W	V	Y	H	L	G	R	F	S	E	A	Q	V	Y	D	K	V	H	L	C	E	F	S	N	P	Y	S	I	E	C	P	E	L	D	S	E	141					
M. brandtii	62	HLHGQNEA	E	A	L	E	C	L	Q	A	E	E	S	I	Q	A	H	A	D	Q	V	E	I	R	S	L	V	T	W	G	N	Y	A	W	V	Y	H	L	G	R	F	S	E	A	Q	V	Y	D	K	V	H	L	C	E	F	S	N	P	Y	S	I	E	C	P	E	L	D	S	E	141					
M. myotis	62	HLHGQNEA	E	A	L	E	C	L	Q	A	E	E	S	I	Q	A	H	A	D	Q	V	E	I	R	S	L	V	T	W	G	N	Y	A	W	V	Y	H	L	G	R	F	S	E	A	Q	V	Y	D	K	V	H	L	C	E	F	S	N	P	Y	S	I	E	C	P	E	L	D	S	E	141					
M. davidii	62	HLHGQNEA	E	A	L	E	C	L	Q	A	E	E	S	I	Q	A	H	A	D	Q	V	E	I	R	S	L	V	T	W	G	N	Y	A	W	V	Y	H	L	G	R	F	S	E	A	Q	V	Y	D	K	V	H	L	C	E	F	S	N	P	Y	S	I	E	C	P	E	L	D	S	E	141					
M. lucifugus	62	HLHGQNEA	E	A	L	E	C	L	Q	A	E	E	S	I	Q	A	H	A	D	Q	V	E	I	R	S	L	V	T	W	G	N	Y	A	W	V	Y	H	L	G	R	F	S	E	A	Q	V	Y	D	K	V	H	L	C	E	F	S	N	P	Y	S	I	E	C	P	E	L	D	S	E	141					
M. molossus	62	HLHGQNEA	E	A	L	E	C	L	Q	A	E	E	S	I	Q	A	H	A	D	Q	V	E	I	R	S	L	V	T	W	G	N	Y	A	W	V	Y	H	L	G	R	F	S	E	A	Q	V	Y	D	K	V	H	L	C	E	F	S	N	P	Y	S	I	E	C	P	E	L	D	S	E	141					
M. natalensis	62	HLHGQNEA	E	A	L	E	C	L	Q	A	E	E	S	I	Q	A	H	A	D	Q	V	E	I	R	S	L	V	T	W	G	N	Y	A	W	V	Y	H	L	G	R	F	S	E	A	Q	V	Y	D	K	V	H	L	C	E	F	S	N	P	Y	S	I	E	C	P	E	L	D	S	E	141					
H. sapiens	62	HLHGQNEA	E	A	L	E	C	L	Q	A	E	E	S	I	Q	A	H	A	D	Q	V	E	I	R	S	L	V	T	W	G	N	Y	A	W	V	Y	H	L	G	R	F	S	E	A	Q	V	Y	D	K	V	H	L	C	E	F	S	N	P	Y	S	I	E	C	P	E	L	D	S	E	141					
P. alecto	143	EGWTL	L	Q	C	G	K	R	N	E	R	A	K	V	C	F	E	K	A	L	E	E	K	P	N	N	P	E	F	S	G	L	A	I	A	M	Y	C	L	D	D	K	P	Q	K	C	S	V	S	V	L	K	Q	A	I	E	L	S	P	D	N	Q	Y	I	K	V	L	L	A	L	K	L	Q	K	222
P. vampyrus	142	EGWTL	L	Q	C	G	K	R	N	E	R	A	K	V	C	F	E	K	A	L	E	E	K	P	N	N	P	E	F	S	G	L	A	I	A	M	Y	C	L	D	D	K	P	Q	K	C	S	V	S	V	L	K	Q	A	I	E	L	S	P	D	N	Q	Y	I	K	V	L	L	A	L	K	L	Q	K	221
P. giganteus	142	EGWTL	L	Q	C	G	K	R	N	E	R	A	K	V	C	F	E	K	A	L	E	E	K	P	N	N	P	E	F	S	G	L	A	I	A	M	Y	C	L	D	D	K	P	Q	K	C	S	V	S	V	L	K	Q	A	I	E	L	S	P	D	N	Q	Y	I	K	V	L	L	A	L	K	L	Q	K	221
R. aegyptiacus	142	EGWTL	L	Q	C	G	K	R	N	E	R	A	K	V	C	F	E	K	A	L	E	E	K	P	N	N	P	E	F	S	G	L	A	I	A	M	Y	C	L	D	D	K	P	Q	K	C	S	V	S	V	L	K	Q	A	I	E	L	S	P	D	N	Q	Y	I	K	V	L	L	A	L	K	L	Q	K	221
R. ferrumequinum	142	EGWTL	L	Q	C	G	K	R	N	E	R	A	K	V	C	F	E	K	A	L	E	E	K	P	N	N	P	E	F	S	G	L	A	I	A	M	Y	C	L	D	D	K	P	Q	K	C	S	V	S	V	L	K	Q	A	I	E	L	S	P	D	N	Q	Y	I	K	V	L	L	A	L	K	L	Q	K	221

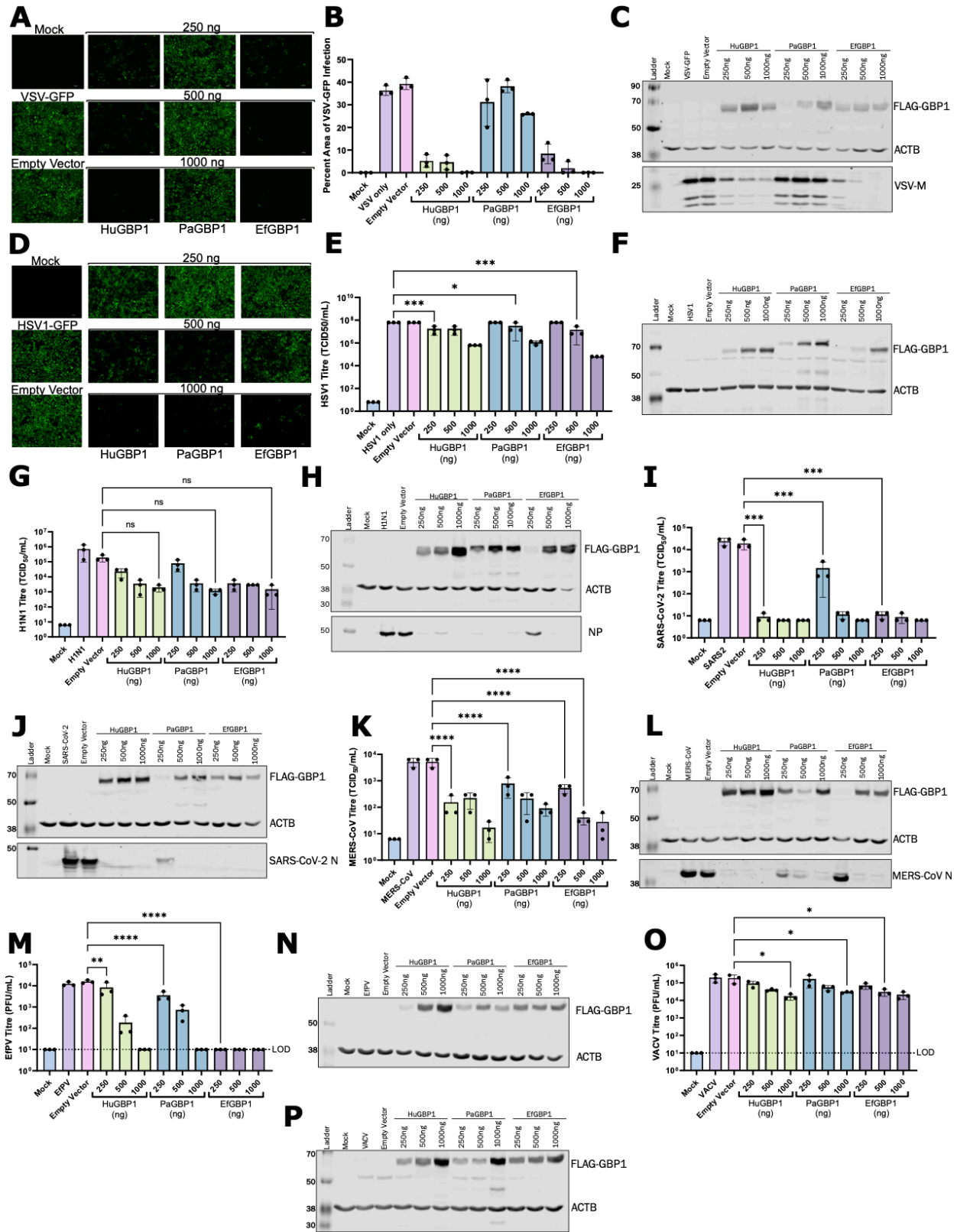
P. alecto	303	ASWNREKIEELS	SKYARDYSE	KAIEKVLNPL	NAYSDLAEP	-ET	ECYQTAFNKE	LPNAEMKQFH	QLSCNFQEYH	GKSEDT	TPV	381		
P. vampyrus	302	ASWNREKIEELS	SKYARDYSE	KAIEKVLNPL	NAYSDLAEP	-ET	ECYQTAFNKE	LPNAEMKQFH	QLSCNFQEYH	GKSEDT	TPV	380		
P. giganteus	302	ASWNREKIEELS	SKYARDYSE	KAIEKVLNPL	NAYSDLAEP	-ET	ECYQTAFNKE	LPNAEMKQFH	QLSCNFQEYH	GKSEDT	TPV	380		
R. aegyptiacus	302	TSWNREKIEELS	SKYARDYSE	KAIEKVLNPL	NAYSDLAEP	-ET	ECYQTAFNKE	LPNAEMKQFH	QLSCNFQEYH	GKSEDT	TPV	380		
R. ferrumequinum	302	VSRRREKIEELS	SKYARDYSE	KAIEKVLNPL	NAYSDLAEP	-ET	ECYQTAFNKE	LPNAEMKQFH	QLSCNFQEYH	GKSEDT	TPV	380		
R. sinicus	302	VSRRREKIEELS	SKYARDYSE	KAIEKVLNPL	NAYSDLAEP	-ET	ECYQTAFNKE	LPNAEMKQFH	QLSCNFQEYH	GKSEDT	TPV	380		
A. jamaicensis	320	TDNRREKIEELS	SKYARDYSE	KAIEKVLNPL	NAYSDLAEP	-ET	ECYQTAFNKE	LPNAEMKQFH	QLSCNFQEYH	GKSEDT	TPV	395		
S. hondurensis	304	ADNRREKIEELS	SKYARDYSE	KAIEKVLNPL	NAYSDLAEP	-ET	ECYQTAFNKE	LPNAEMKQFH	QLSCNFQEYH	GKSEDT	TPV	379		
P. hastatus	310	ADNRREKIEELS	SKYARDYSE	KAIEKVLNPL	NAYSDLAEP	-ET	ECYQTAFNKE	LPNAEMKQFH	QLSCNFQEYH	GKSEDT	TPV	385		
P. discolor	304	ADNRREKIEELS	SKYARDYSE	KAIEKVLNPL	NAYSDLAEP	-ET	ECYQTAFNKE	LPNAEMKQFH	QLSCNFQEYH	GKSEDT	TPV	379		
D. rotundus	302	ADNRREKIEELS	SKYARDYSE	KAIEKVLNPL	NAYSDLAEP	-ET	ECYQTAFNKE	LPNAEMKQFH	QLSCNFQEYH	GKSEDT	TPV	377		
E. fuscus	302	AGGNREKMEEL	RKSA	MDYSNKAIEK	GLNPLVY	SDLTELES	EECYQT	---	AFNKAERKQ	LHQGYSN	FQENK	SGEDT	TPV	377
M. brandtii	302	AGGNREKMEEL	RKSA	MDYSNKAIEK	GLNPLVY	SDLTELES	EECYQT	---	AFNKAERKQ	LHQGYSN	FQENK	SGEDT	TPV	377
M. myotis	302	AGGNREKMEEL	RKSA	MDYSNKAIEK	GLNPLVY	SDLTELES	EECYQT	---	AFNKAERKQ	LHQGYSN	FQENK	SGEDT	TPV	377
M. davidii	302	ADGNREKMEEL	RKSA	MDYSNKAIEK	GLNPLVY	SDLTELES	EECYQT	---	AFNKAERKQ	LHQGYSN	FQENK	SGEDT	TPV	377
M. lucifugus	302	ADGNREKMEEL	RKSA	MDYSNKAIEK	GLNPLVY	SDLTELES	EECYQT	---	AFNKAERKQ	LHQGYSN	FQENK	SGEDT	TPV	377
M. molossus	302	APRNREKIEELS	SKYARDYSE	KAIEKVLNPL	NAYSDLAEP	-ET	ECYQTAFNKE	LPNAEMKQFH	QLSCNFQEYH	GKSEDT	TPV	380		
M. natalensis	302	ARRRREKIEELS	SKYARDYSE	KAIEKVLNPL	NAYSDLAEP	-ET	ECYQTAFNKE	LPNAEMKQFH	QLSCNFQEYH	GKSEDT	TPV	377		
H. sapiens	300	ASGNREKMEEL	RKSA	MDYSNKAIEK	GLNPLVY	SDLTELES	EECYQT	---	AFNKAERKQ	LHQGYSN	FQENK	SGEDT	TPV	379

P. alecto	382	QHHLKDL	STIK	STEKEKEK	CPQNV	VAENQLPQ	NAPNSWYL	QGLTHKK	NGYLLQAAEC	FEKEL	GRLLR	DSPSGIS	IFLP	461	
P. vampyrus	381	QHHLKDL	STIK	STEKEKEK	CPQNV	VAENQLPQ	NAPNSWYL	QGLTHKK	NGYLLQAAEC	FEKEL	GRLLR	DSPSGIS	IFLP	460	
P. giganteus	381	QHHLKDL	STIK	STEKEKEK	CPQNV	VAENQLPQ	NAPNSWYL	QGLTHKK	NGYLLQAAEC	FEKEL	GRLLR	DSPSGIS	IFLP	460	
R. aegyptiacus	381	QHHLKDL	STIK	STEKEKEK	CPQNV	VAENQLPQ	NAPNSWYL	QGLTHKK	NGYLLQAAEC	FEKEL	GRLLR	DSPSGIS	IFLP	460	
R. ferrumequinum	381	QHHLKDL	STIK	STEKEKEK	CPQNV	VAENQLPQ	NAPNSWYL	QGLTHKK	NGYLLQAAEC	FEKEL	GRLLR	DSPSGIS	IFLP	460	
R. sinicus	381	QHHLKDL	STIK	STEKEKEK	CPQNV	VAENQLPQ	NAPNSWYL	QGLTHKK	NGYLLQAAEC	FEKEL	GRLLR	DSPSGIS	IFLP	460	
A. jamaicensis	396	LHHLNLT	VNTK	ATEKEKAE	KYQPN	GAENQLPQ	NAPNSWYL	QGLTHKK	NGYLLQAAEC	FEKEL	GRLLR	DSPSGIS	IFLP	475	
S. hondurensis	380	LHHLNLT	VNTK	ATEKEKAE	KYQPN	GAENQLPQ	NAPNSWYL	QGLTHKK	NGYLLQAAEC	FEKEL	GRLLR	DSPSGIS	IFLP	459	
P. hastatus	386	LHHLNLT	VNTK	ATEKEKAE	KYQPN	GAENQLPQ	NAPNSWYL	QGLTHKK	NGYLLQAAEC	FEKEL	GRLLR	DSPSGIS	IFLP	465	
P. discolor	380	LHHLNLT	VNTK	ATEKEKAE	KYQPN	GAENQLPQ	NAPNSWYL	QGLTHKK	NGYLLQAAEC	FEKEL	GRLLR	DSPSGIS	IFLP	459	
D. rotundus	378	LHHLNLT	VNTK	ATEKEKAE	KYQPN	GAENQLPQ	NAPNSWYL	QGLTHKK	NGYLLQAAEC	FEKEL	GRLLR	DSPSGIS	IFLP	457	
E. fuscus	378	QHHL	---	STKST	---	---	ANGAERQLPR	---	NSWYLQGLTHKK	NGDLPRAAEC	FEKEL	GRLLR	DSPSGIS	IFLP	440
M. brandtii	378	QHHL	---	STKST	---	---	ANGAERQLPR	---	NSWYLQGLTHKK	NGDLPRAAEC	FEKEL	GRLLR	DSPSGIS	IFLP	440
M. myotis	378	QHHL	---	STKST	---	---	ANGAERQLPR	---	NSWYLQGLTHKK	NGDLPRAAEC	FEKEL	GRLLR	DSPSGIS	IFLP	440
M. davidii	378	QHHL	---	STKST	---	---	ANGAERQLPR	---	NSWYLQGLTHKK	NGDLPRAAEC	FEKEL	GRLLR	DSPSGIS	IFLP	440
M. lucifugus	378	QHHL	---	STKST	---	---	ANGAERQLPR	---	NSWYLQGLTHKK	NGDLPRAAEC	FEKEL	GRLLR	DSPSGIS	IFLP	440
M. molossus	381	LHHLNLT	VNTK	ATEKEKAE	KYQPN	GAENQLPQ	NAPNSWYL	QGLTHKK	NGYLLQAAEC	FEKEL	GRLLR	DSPSGIS	IFLP	452	
M. natalensis	378	LHHLNLT	VNTK	ATEKEKAE	KYQPN	GAENQLPQ	NAPNSWYL	QGLTHKK	NGYLLQAAEC	FEKEL	GRLLR	DSPSGIS	IFLP	448	
H. sapiens	380	QHHL	---	STKST	---	---	ANGAERQLPR	---	NSWYLQGLTHKK	NGDLPRAAEC	FEKEL	GRLLR	DSPSGIS	IFLP	459

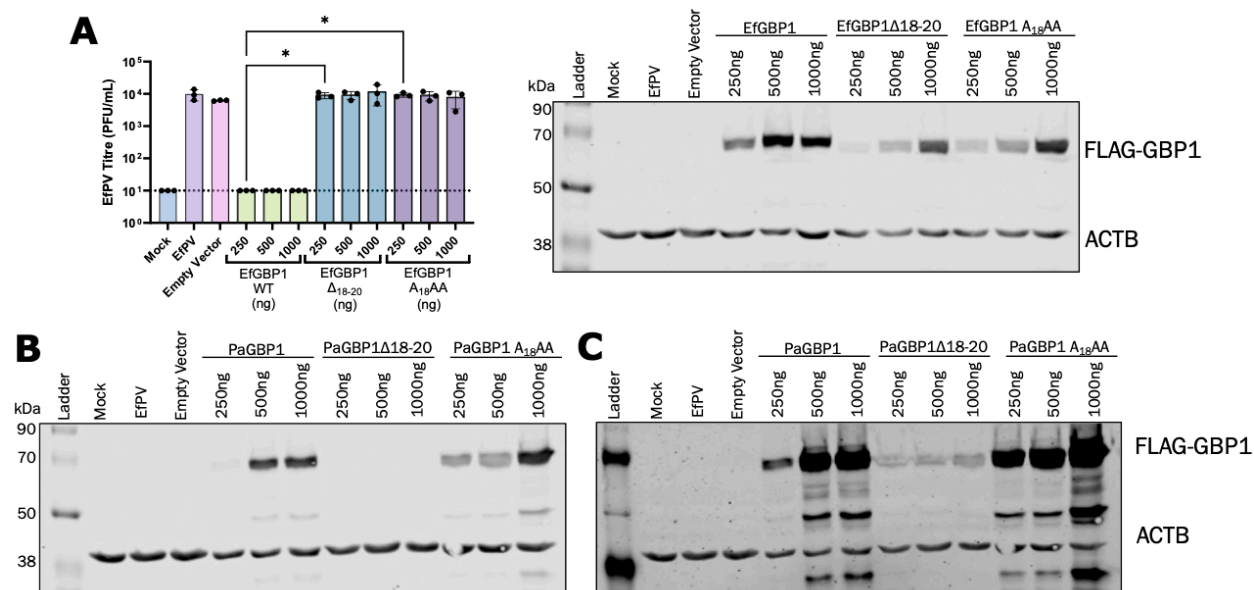
P. alecto	462	ASELKE	-GSEEVGGAGDSST	-LRELDPD		487
P. vampyrus	461	ASELKE	-GSEEVGGAGDSST	-LRELDPD		486
P. giganteus	461	ASELKE	-GSEEVGGAGDSST	-LRELDPD		486
R. aegyptiacus	461	AADLKE	-GSEEVGGAGDSST	-LRELDPD		487
R. ferrumequinum	461	TSELEE	-GSEEVGGAGDSST	-LRELDPD		486
R. sinicus	461	TSELEE	-GSEEVGGAGDSST	-LRELDPD		487
A. jamaicensis	476	ASELEE	-GSEEVGGAGDSST	-LRELDPD		537
S. hondurensis	460	TSELEE	-GSEEVGGAGDSST	-LRELDPD		521
P. hastatus	466	ASELEE	-GSEEVGGAGDSST	-LRELDPD		527
P. discolor	460	ASELEE	-GSEEVGGAGDSST	-LRELDPD		521
D. rotundus	458	ASELEE	-GSEEVGGAGDSST	-LRELDPD		519
E. fuscus	441	AEELAE	-GSEEVGGAGDSST	-LRELDPD		472
M. brandtii	441	AEELAE	-GSEEVGGAGDSST	-LRELDPD		472
M. myotis	441	AEELAE	-GSEEVGGAGDSST	-LRELDPD		472
M. davidii	441	AEELAE	-GSEEVGGAGDSST	-LRELDPD		472
M. lucifugus	441	AEELAE	-GSEEVGGAGDSST	-LRELDPD		472
M. molossus	453	ASELEE	-GSEEVGGAGDSST	-LRELDPD		478
M. natalensis	449	ASELEE	-GSEEVGGAGDSST	-LRELDPD		471
H. sapiens	460	ASELEE	-GSEEVGGAGDSST	-LRELDPD		490

Supplementary Figure 15. Multiple protein sequence alignment for bat IFIT3. Grey boxes indicate identical residues. ClustalW alignment was generated using MacVector software. Human sequence was included as a comparator. Purple box highlights IFIT1 binding motif.

Supplementary Figure 16. Multiple protein sequence alignment for bat GBP1. Grey boxes indicate identical residues. The four conserved motifs within the GTP-binding domain (G1-G4) and the carboxy-terminal isoprenylation (CaaX) motif are marked in purple and teal boxes, respectively. Newly identified motif that plays a role in the antiviral activity of EfGBP1 against EfPV (AV1) is marked in green. ClustalW alignment was generated using MacVector software. Human sequence was included as a comparator.



Supplementary Figure 17. Antiviral activity of GBP1. A549-ACE2 cells were transfected with 250 to 1000ng of HuGBP1, PaGBP1, or EfGBP1 for 24 hours, followed by infection with VSV-GFP (MOI 0.01) (**A-C**), HSV1- GFP (MOI 0.01) (**D-F**), H1N1-PR8 (MOI 0.01) (**G-H**), SARS-CoV-2 (MOI 0.01) (**I-J**), MERS-CoV (MOI 0.1) (**K-L**), VACV (MOI 0.01) (**M-N**), or EfPV (MOI 0.01) (**O-P**). Immunofluorescent microscopy was performed for VSV-GFP to quantify virus replication. Supernatant for all other viruses was titrated by TCID₅₀ or plaque assay (n=3; One-way ANOVA, Tukey's multiple comparisons test). Immunoblotting was performed to confirm FLAG-GBP1 expression. β -actin was used as loading control. VSV-GFP, H1N1, SARS-CoV-2, and MERS-CoV infection was further validated by probing for virus-specific proteins in immunoblots. Immunoblots are representative of one replicate. Full blots can be found in the Source Data file.



Supplementary Figure 18. Mutagenesis of GBP1. (A) A549-ACE2 cells were transfected with 250 to 1000ng of EfGBP1 wildtype (WT), deletion (Δ_{18-20}), or substitution (A₁₈AA) variant for 24 hours, followed by infection with EfPV (MOI 0.01) for 48 hours. Supernatant was titrated by plaque assay (n=3; One-way ANOVA, Tukey's multiple comparisons test). Cell lysates were probed for FLAG-GBP1 and ACTB. All samples in Figures 4F, 4G and S17 were processed together and were derived from three independent biological replicates. (B) A549-ACE2 cells were transfected with 250 to 1000ng of WT, Δ_{18-20} , or A₁₈AA for PaGBP1 for 24 hours, followed by infection with EfPV (MOI 0.01) for 48 hours. Cell lysates were probed for FLAG-GBP1 and ACTB. (C) Overexposed image of (B) to demonstrate reduced expression of PaGBP1(Δ_{18-20}). All immunoblots are representative of one replicate. Full blots can be found in the Source Data file.