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**Supplemental Figure 1: Effects of CDK2 inhibition on induced HIV-1 reactivation in EF7 T cells.** Complementary to Figure 3, we tested the concentration dependent effect of (A) Roscovitine, (B) Purvalanol, (C) and Kenpaullone (D) CDK2 inhibitor III on PMA-induced HIV-1 reactivation in EF7 T cells. The results show data for at least 3 independent experiments per tested inhibitor.

1 **Supplemental Table 1:** Altered kinase activities in latently HIV-1 infected CA5 T cells as  
 2 detected by Kinexus antibody arrays, PamGene kinase substrate array analysis and upstream  
 3 kinase predictions. For the Kinexus antibody arrays globally normalized fluorescence data for  
 4 each altered kinase/phosphatase/transcription factor are presented, as well as Z-ratios. Z  
 5 normalization in general displays greater stability as a result of examining where each signal  
 6 falls in the overall distribution of values within a given sample than fold-induction data. For  
 7 further details see the detailed description in for the kinome data analysis the Material and  
 8 Methods section. The complete selection of kinases was uploaded into MetaCore to derive the  
 9 protein-protein interaction network depicted in Figure 6.

**A**

Target Protein Name	Phospho Site (Human)	Globally Normalized - Jurkat	Globally Normalized - CA5	Z-ratio (CA5, Jurkat)	Uniprot Link
PTP1D	Pan-specific	3334	791	-2.36	Q06124
Pyk2	Y679	1903	525	-2.62	Q14289
ROKa (ROCK2)	Pan-specific	4495	1254	-2.58	Q75116
PTP1B	Pan-specific	3394	1056	-2.34	P18031
Progesterone Recept	S294	1219	414	-2.26	P05401
Rb	S780	942	330	-2.17	P05400
RIP2/RICK	Pan-specific	2470	844	-2.17	Q43553
IRAK2	Pan-specific	940	351	-2.64	Q43187
IKBa	Y42	1762	674	-1.95	P25963
PTP1C	Pan-specific	4976	1853	-1.95	P23350
GSK3a	Y279	612	294	-1.77	P49840
Rad17	S656	1597	687	-1.72	Q75943
Rac1	Pan-specific	3325	1469	-1.62	P83000
Rac1	S71	2091	942	-1.61	P83000
RONa	Pan-specific	2169	987	-1.58	Q04912
PRAS40	T246	761	390	-1.56	Q98636
HspBP1	Pan-specific	2770	1268	-1.56	Q9N2L4
CDK1/2	Y15	4333	2015	-1.50	P06493
MSH2	Pan-specific	2620	1238	-1.50	P43246
PTP1D	S580	4415	2147	-1.41	Q06124
HR23B	Pan-specific	1914	993	-1.32	P54727
Chk1	S280	4025	2056	-1.31	Q14757
Src	Y419	817	443	-1.28	P12931
CDK1/2	Y15	977	531	-1.26	P06493
CDK1/2	Y15	3275	1740	-1.24	P06493
SPHK2	Pan-specific	657	366	-1.24	Q9NRA0
Myc	S373	1576	858	-1.23	P11106
S6K1	T412	563	315	-1.23	P23443
NIK (MAP3K14)	Pan-specific	1799	998	-1.19	Q99558
Rb	S807	554	319	-1.18	P06400
Abl	Pan-specific	567	327	-1.17	P00519
PTEN	380*Y382+T38	4089	2251	-1.16	P60484
MEK2 (MAP2K2)	T394	2322	1300	-1.15	P26507
PTEN	380*Y382+T38	2604	1475	-1.12	P60484
PTEN	380*Y382+S38	3250	1831	-1.12	P60484
Nf-kappaB p65	S529	1232	721	-1.10	Q04206
ZAP70	Pan-specific	3272	1870	-1.09	P43403
RSK1/2/3	S737/S777/S70	497	300	-1.09	Q15418
MKP2	Pan-specific	2649	1547	-1.06	Q13115
HDAC4	Pan-specific	594	364	-1.04	P58524
PP5C	Pan-specific	2110	1255	-1.03	P53041
JNK1/2/3	Pan-specific	2901	4659	1.03	P45983
CASP3	Pan-specific	1151	1914	1.06	P42574
CDC2L5 (CHED)	Pan-specific	971	1632	1.06	Q14024
GCK	Pan-specific	5801	9326	1.07	Q12851
Cofilin 2	S3	9207	14692	1.09	Q9Y281
Hsc70	Pan-specific	3050	5044	1.10	P11142
Hsp1 (MAP4K1)	Pan-specific	10367	16569	1.10	Q92918
PKCdelta	T655	822	1416	1.10	P24723
IGF1R	Y1289	2941	4909	1.11	P08089
CDK2	Pan-specific	4448	7415	1.13	P24941
IKKa	Pan-specific	8492	13904	1.13	Q15111
IRAK3	Pan-specific	503	965	1.30	Q9V816
Hsp105	Pan-specific	4115	7703	1.37	Q92598
Hsp27	S15	5912	11021	1.38	P04792
Caveolin 2	Pan-specific	1364	2708	1.43	P51636
IRAK1	Pan-specific	2773	5657	1.92	P51817
Hsp90a/b	Pan-specific	1298	2737	1.95	P07300
JNK2 (MAPK9)	Pan-specific	1275	2755	1.99	P45984
CPG16/CaMKinase V	Pan-specific	2588	5842	1.73	Q15075
IKBa	Pan-specific	3177	7639	1.87	P25963

**B**

Peptide Substrate	Sequence	Tyrosine	Uniprot Link
DCX_109_121	GIVYAVSSDRFRS	[112]	O43602
K2C6B_53_65	GAGFGSRSLYGLG	[62]	P04259
CDK2_8_20	EKIGEGTYGVVYK	[15, 19]	P24941
DYR1A_312_324	CQLGQRIYQVYQS	[319, 321]	Q13627
MK10_216_228	TSFMMPYVVVTRY	[223, 228]	P53779
MK12_178_190	ADSEMTGYVVVTRW	[185]	P53778
NCF1_313_325	QRSRKRSLQDAYR	[324]	P14598
RON_1353_1365	YVQLPATYMNLP	[1353, 1360]	Q04912
TYRO3_679_691	KIYSGDYRQGGCA	[681, 685, 686]	Q06418

  

Peptide Substrate	Sequence	Serine	Threonine	Uniprot Link
CAC1C_1974_1986	ASLGRRASFLHEC	[1975, 1981]	[]	Q13936
CFTR_730_742	EPLERRLSLPDS	[737, 742]	[]	P13569
DESP_2842_2854	RSGSRRSFDATG	[2843,2845,2849]	[2853]	P15924
EPB42_241_253	LLNKRKRSVPILR	[248]	[]	P16452
F263_454_466	NPLMRRNSVTPLA	[461]	[463]	Q16875
KCNA6_504_516	ANRRRRSYLPTP	[511]	[515]	P17658
KPB1_1011_1023	QVEFRRLSISAES	[1018,1020,1023]	[]	P46020
MYPC3_268_280	LSAFRRRTSLAGGG	[269, 275]	[274]	Q14896
TY3H_64_78	RFIGRRQSLIEDARK	[71]	[]	P07101

  

Name	Prot ID	# in data set
PIM1	P11309	7
MSK1 (RPS6KA5)	O75582	6
Pim3 (AL549548)	P58750	6
PKG1 (PRKG1)	Q13976	6
MAPKAPK3	Q16644	5
PKACa (PRKACA)	P17612	4
PKCb (PRKCB1)	P05771	4
PKG2 (PRKG2)	Q13237	4
AXL	P30530	3
BRK	Q13882	3
MAPKAPK2	P49137	3
PIM2	Q9P1W9	3
PKCa (PRKCA)	P17252	3
PKCa (PRKCA)	P17252	3
p70S6Kb (RPS6KB2)	Q9UBS0	2
PKACb PRKACB	P22694	2
PKCd (PRKCD)	Q05655	2
PKCt (PRKCQ)	Q04759	2
TRKB (NTRK2)	Q16620	2
MEK1 (MAP2K1)	Q02750	1
MEK2 (MAP2K2)	P36507	1
MEK7 (MAP2K7)	O14733	1
p38a MAPK (MAPK)	Q16539	1
p38d MAPK (MAPK)	O15264	1
p38g MAPK (MAPK)	P53778	1
p70S6K (RPS6KB1)	P23443	1
PKCe (PRKCE)	Q02156	1
PKCg (PRKCG)	P05129	1
TRKA (NTRK1)	P04629	1
TRKC (NTRK3)	Q16288	1

**C**

predicted kinases

kinase target	AS601245
ACK1	42.8
CDK2/cyclin A	94.4
CDK2/cyclin E	82.7
CDK9/cyclin T1	23.3
CK2a	22.1
CK2a2	27.1
DYRK1/DYRK1A	52.7
DYRK1B	53.2
DYRK2	22.2
GSK3a	2.4
GSK3b	6.2
JNK1	87.6
JNK2	67.5
JNK3	105.3
MUSK	14.8
PIM1	11.6
PIM2	91.2
PIM3	3.7

**Supplemental Table 2: On-target/off-target activity of AS601245.** Numbers represent residual enzyme activity in the presence of the respective inhibitor.

*Data from: Anastassiadis T1, Deacon SW, Devarajan K, Ma H, Peterson JR. Nat Biotechnol. 2011 Oct 30;29(11):1039-45*

*Comprehensive assay of kinase catalytic activity reveals features of kinase inhibitor selectivity.*

1 **Supplemental Table 3**

2

<b>Relevant characteristics of healthy donors</b>			
<b>Gender</b>	<b>Race</b>	<b>CD4</b>	<b>%CD3</b>
F	AA	-	81
F	AA	-	75
M	C	-	77
M	C	-	78
M	C	-	81
M	AA	-	75
M	ASIAN	-	76
F	AA	-	75
M	C	-	62

<b>Relevant characteristics of HIV patients</b>			
<b>Gender</b>	<b>Race</b>	<b>CD4</b>	<b>%CD3</b>
F	AA	188	56
F	AA	158	70
M	C	131	63
M	C	284	76
M	C	117	53
M	AA	210	74
M	AA	148	68
M	AA	209	71

3

1 **Supplemental Table 4:** List of kinases/phosphatases found altered in T cells from HIV-1  
2 patients on fully suppressive ART (n = 8) when compared to T cell material from healthy donors  
3 (n = 9). For the Kinexus antibody array data globally normalized fluorescence data for each  
4 altered kinase/phosphatase/transcription factor are presented, as well as Z-ratios. Z  
5 normalization in general displays greater stability as a result of examining where each signal  
6 falls in the overall distribution of values within a given sample than fold-induction data. For  
7 further details see the detailed description in the Material and Methods section.

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Target Protein Name	Phospho Site (Human)	Globally Normalized - Control	Globally Normalized - HIV	Z-ratio (C, HIV)	Uniprot Link
4E-BP1	T45	943	442	-1.79	<a href="#">Q13541</a>
Adducin a	S726	881	1233	1.66	<a href="#">P35611</a>
Bcl-xL	Pan-specific	5053	3209	-1.31	<a href="#">Q07817</a>
Bcl-xS/L	Pan-specific	6377	4134	-1.32	<a href="#">Q07817</a>
Bid	Pan-specific	2419	1428	-1.33	<a href="#">P59957</a>
BRCA1	S1423	1709	752	-2.15	<a href="#">P38398</a>
BRD2	Pan-specific	767	359	-1.74	<a href="#">P25440</a>
CA9	Pan-specific	1647	904	-1.45	<a href="#">Q16790</a>
Caldesmon	S789	2451	909	-2.80	<a href="#">Q05682</a>
CAMK1a	Pan-specific	1771	817	-2.02	<a href="#">Q14012</a>
CAMK2b	Pan-specific	1232	684	-1.33	<a href="#">Q13554</a>
CaMK4	Pan-specific	1164	461	-2.38	<a href="#">Q16566</a>
CASP1	Pan-specific	1812	1011	-1.43	<a href="#">P29466</a>
CASP3	Pan-specific	1129	495	-2.05	<a href="#">P42574</a>
CASP6	Pan-specific	613	225	-2.43	<a href="#">P56212</a>
CASP7	Pan-specific	1778	655	-2.72	<a href="#">P55210</a>
CASP7	Pan-specific	1474	609	-2.31	<a href="#">P55210</a>
Catenin a	S641	925	408	-1.97	<a href="#">P35221</a>
Catenin b	Y333	3923	2008	-1.92	<a href="#">P35222</a>
Catenin b	S33	2507	1466	-1.37	<a href="#">P35222</a>
Caveolin 1	Y14	962	322	-2.85	<a href="#">Q03135</a>
Caveolin 1	Pan-specific	829	338	-2.19	<a href="#">Q03135</a>
Cdc25C	Pan-specific	6383	4178	-1.29	<a href="#">P30307</a>
CDK7	Pan-specific	1088	563	-1.52	<a href="#">P24941</a>
CDK7	Pan-specific	733	326	-1.88	<a href="#">P50613</a>
CDK8	Pan-specific	2677	1320	-1.93	<a href="#">P49336</a>
CK1d	Pan-specific	3720	5904	1.65	<a href="#">P48730</a>
DDIT3(CHOP)	Pan-specific	1424	2340	2.03	<a href="#">P35639</a>
EGFR	Y1092	1745	2334	1.33	<a href="#">P00533</a>
eIF2a	S52	822	1244	1.93	<a href="#">P05198</a>
eIF4E	S209	775	1513	2.75	<a href="#">P06730</a>
ErbB3	Y1328	2367	1390	-1.34	<a href="#">P21860</a>
Erk1 (MAPK3)+ Erk2 (MAPK1)	T202	1113	612	-1.33	<a href="#">P27361</a>
FAK	S843	937	1194	1.35	<a href="#">Q05397</a>
FAK	S722	1328	1823	1.49	<a href="#">Q05397</a>
GSK3a	Pan-specific	792	386	-1.62	<a href="#">P49840</a>
GSK3a	Y279	798	1125	1.71	<a href="#">P49840</a>
Hsp27	S82	2679	1545	-1.43	<a href="#">P04792</a>
IKKα	Pan-specific	984	514	-1.46	<a href="#">Q15111</a>
IRAK1	Pan-specific	1296	718	-1.35	<a href="#">P51617</a>
JNK1 (MAPK8)	Pan-specific	1213	1564	1.32	<a href="#">P45983</a>
JNK1/2/3	T183 + Y185	1139	1448	1.29	<a href="#">P45983</a>
JNK1/2/3	T183 + Y185	1519	2029	1.36	<a href="#">P45983</a>
Lck	Y192	2396	3591	1.59	<a href="#">P06239</a>
MST3	Pan-specific	752	990	1.52	<a href="#">Q9Y6E0</a>
NFκB p50	Pan-specific	4340	6380	1.36	<a href="#">P19838</a>
p25	Pan-specific	3670	5718	1.59	<a href="#">Q15078</a>
p27 Kip1	Pan-specific	2368	3782	1.60	<a href="#">P46527</a>
p53	Pan-specific	3321	5034	1.53	<a href="#">P04637</a>
PDGFRα	Y754	3255	6354	2.33	<a href="#">P16234</a>
PERP	Pan-specific	714	937	1.52	<a href="#">Q9H230</a>
PKA Ca/b	Pan-specific	1184	1633	1.53	<a href="#">P17612</a>
PKA Ca/b	T198	6155	10125	1.62	<a href="#">P17612</a>
PKBa (Akt1)	Pan-specific	4071	6185	1.48	<a href="#">P31749</a>
PKBa (Akt1)	S473	1420	2702	2.49	<a href="#">P31749</a>
PKCb1	Pan-specific	1012	434	-2.08	<a href="#">P05771</a>
PKCg	Pan-specific	1836	3565	2.48	<a href="#">P05129</a>
PKCq	Pan-specific	1113	1419	1.30	<a href="#">Q04759</a>
PKCz	Pan-specific	1800	2476	1.40	<a href="#">Q05513</a>
PP2Ca	Pan-specific	1019	470	-1.86	<a href="#">P35813</a>
PP5C	Pan-specific	1014	1405	1.59	<a href="#">P53041</a>
RSK1/2	S363/S369	658	1107	2.33	<a href="#">Q15418</a>
STAT3	S727	792	1009	1.40	<a href="#">P40763</a>
STAT3	Pan-specific	2702	6330	2.96	<a href="#">P40763</a>
STAT5B	Pan-specific	5627	8764	1.47	<a href="#">P51692</a>
Trail	Pan-specific	10920	17704	1.41	<a href="#">P50591</a>