

**Supporting Information S1 – Definitions and diagnostic performance of Inno-Lia algorithms for incident HIV-1 infection (adapted from [19])**

Alg #	Definition	% Sensitivity	% Specificity
2	if sgp120≤1 then RECENT else older	54.46	95.41
3	if gp41≤0.5 then RECENT else older	20.30	100.0
3.1	if gp41≤1 then RECENT else older	23.53	100.0
3.2	if gp41≤2 then RECENT else older	44.02	98.11
4	if p31=0 then RECENT else older	60.15	92.70
4.1	if p31≤0.5 then RECENT else older	63.95	91.89
5	if p24≤0 then RECENT else older	26.00	95.54
6	if p17=0 then RECENT else older	40.80	90.80
7	if sgp120+gp41+p31≤4 then RECENT else older	54.08	98.38
8	if gp41≤0.5 OR (sgp120+gp41+p31≤4) OR (sgp120+gp41+p31+p24+p17≤ 6.5) then RECENT else older	54.65	96.75
8.1	if gp41≤0.5 OR (sgp120+gp41+p31≤4) OR ((sgp120+gp41+p31+p24+p17≤ 6.5) AND p31≤1) then RECENT else older	54.65	96.76
9	if sgp120+gp41≤4 AND p31=0 then RECENT else older	52.75	98.38
10	if p31=0 AND p24 ≥ 2 then RECENT else older	30.93	95.27
11	if (sgp120+gp41≤2.5) OR (sgp120+gp41+p31+p24+p17≤6.5) OR (p31=0 AND p24 ≥ 2) then RECENT else older	61.48	93.37
11.1	if (sgp120+gp41≤2.5) OR ((sgp120+gp41+p31+p24+p17≤6.5) AND p31≤1) OR (p31=0 AND p24 ≥ 2) then RECENT else older	61.48	93.51

11.2	if (sgp120+gp41≤2.5) OR ((sgp120+gp41+p31+p24+p17≤6.5) AND p31≤1 AND p17≤p24) OR (p31=0 AND p24 ≥ 2) then RECENT else older	61.48	94.05
12	if (p24 ≥ 2 AND p31=0) OR (gp41≤.5) OR (sgp120+gp41+p31≤4) OR sgp120+gp41+p31+p24+p17≤6.5) then RECENT else older	61.67	93.37
12.1	if (p24 ≥ 2 AND p31=0) OR (gp41≤.5) OR (sgp120+gp41+p31≤4) OR (p31≤1 AND (sgp120+gp41+p31+p24+p17≤6.5)) then RECENT else older	61.67	93.38
13	if (sgp120+gp41≤4 AND p31=0) OR (p31=0 AND p24 ≥ 2) then RECENT else older	59.77	95.00
13.1	if gp41≤2 OR (p31=0 AND p24 ≥ 2) then recent else older	60.34	93.92
14	if (sgp120+gp41+p31+p24+p17≤6.5 AND p31≤1) then RECENT else older	45.92	97.84
15	if (sgp120≤1 AND p31≤1) OR (gp41≤2 AND p31≤1) OR (p17 ≥ 2 AND p31=0) OR (p31=0 AND p24 ≥ 2) then RECENT else older	62.24	94.32
15.1	if (sgp120≤1 AND p31≤1 AND p17≤p24) OR (gp41≤2 AND p31≤1 AND p17≤p24) OR (p17 ≥ 2 AND p31=0 AND p17≤p24) OR (p31=0 AND p24 ≥ 2 AND p17≤p24) then RECENT else older	61.67	95.14
16	if (sgp120≤1 AND (p31+p24+p17≤2.5)) OR (gp41≤1 ) OR (p31≤0.5 AND (sgp120+gp41+p24+p17≥15)) OR (p24=0 AND gp41≤2) OR (p24 ≥ 3 AND p31=0) then RECENT else older	50.47	96.62
17	if (sgp120 * gp41)≤2 then RECENT else older	50.09	98.24
18	if (sgp120 * gp41≤1) OR (p24+p31=0) then RECENT else older	46.11	98.24