









Supplementary Figure 1. Representative thymus analysis. Thymic density and volume calculations were performed by a thoracic radiologist blinded to treatment status. A GE Advantage Windows workstation was used to quantify thymic volume and density by tracing the contours of the anterior mediastinum on sequential 5 mm sections extending from the sternal notch to the base of the heart. Traced thymus is highlighted in red. Panels proceed from left to right, top to bottom.

Supplementary Figure 2. GH treatment is associated with decreased T-cell activation in HIV- infected adults. (A) Comparison of changes in the GH arm versus the observational control arm over the first year of the study showed that the percentage of CD38⁺DR⁺ CD8 and CD4 cells increased in the first 3 months into GH treatment, but decreased significantly (compared to no GH) by the end of the first year. (B) The percentage of Fas⁺ cells also decreased with GH treatment. (C, D) GH-associated changes (circles) in activated cells were confirmed by comprehensive regression analysis. Estimated changes with 95% confidence intervals are displayed. Regression analysis measures the effects of 1 year of GH treatment compared to changes over 1 year in the absence of GH. Confidence intervals and additional data are displayed in Tables 2 and 3.

* $p \leq 0.05$ for comparison of GH versus no GH.

Supplementary Figure 3. Effects of GH treatment on circulating factors. (A) Comparison of changes in the GH arm versus the observational control arm over the first year of the study showed that circulating levels of IGF-1 rose quickly after GH initiation and remained above baseline levels throughout the treatment period. After one month of

GH treatment, the median absolute increase in IGF-1 was 223 pg/mL. **(B)** GH treatment was associated with higher IL-7 levels, although IL-7 levels declined over time, even with GH treatment. **(C)** Comprehensive regression analysis, including cross-over data of GH treatment in observational controls, showed that GH treatment (circles) was associated with significant increases in IGF-1 levels and with increases in IL-7 that fell short of statistical significance. Estimated changes with 95% confidence intervals are displayed. Regression analysis measures the effects of 1 month (IGF-1) or 1 year (IL-7) of GH treatment compared to changes in the absence of GH. Median values are displayed in panels **(A)** and **(B)**. Confidence intervals and additional data are displayed in Tables 2 and 3. * $p \leq 0.05$ for comparison of GH versus no GH.

Supplementary Figure 4. GH discontinuation is associated with recurrence of thymic involution. Representative serial thymus CT scans from two study participants **(A, B)**, taken at study baseline, 6 months into GH treatment, and twelve months after GH discontinuation, reveal the disappearance of bright tissue and the return of nearly-black tissue (arrows). Radiographic changes are consistent with re-involution of the thymus after GH discontinuation.

Supplemental Table 1 Baseline Interactions: GH Effects on Thymus

Outcome	Baseline Value	Change with GH (vs No GH)	95% CI	P
Thymic Density	Total CD4⁺ Cells > 227 Cells/μl	+ 55.0 HU	26.7 – 83.4	0.0004
	Total CD4⁺ Cells \leq 227 Cells/μl	+ 24.0 HU	-2.7 – 50.3	0.077
	Difference between Groups			0.041
	Age > 50.3 Years	+ 26.7 HU	-2.0 – 55.0	0.067
	Age \leq 50.3 Years	+ 49.0 HU	20.9 – 74.9	0.0009
	Difference between Groups			0.144
	GH Peak > 24.2 ng/ml	+ 52.9 HU	26.8 – 79.0	0.0002
	GH Peak \leq 24.2 ng/ml	+ 13.9 HU	-16.8 – 44.6	0.363
	Difference between Groups			0.012
	Circulating IGF-1 > 179.5 pg/ml	+ 55.7 HU	28.2 – 83.2	0.0002
	Circulating IGF-1 \leq 179.5 pg/ml	+ 22.0 HU	-4.3 – 48.2	0.098
Difference between Groups			0.012	
Thymic Volume	Androgen Receipt	- 29.0 %	-54.6 – 11.1	0.130
	No Androgen Receipt	+ 46.7 %	-1.9 – 119.4	0.062
	Difference between Groups			0.002
	GH Peak > 24.2 ng/ml	+ 23.7 %	-18.2 – 87.1	0.304
	GH Peak \leq 24.2 ng/ml	- 24.6 %	-52.9 – 20.6	0.230
	Difference between Groups			0.035

Supplemental Table 2: Effect of GH on HIV Viremia^{A,B}

Arm	N Subjects	Study Month	% Change in Viral Load (Compared to Baseline)	
			Median	Mean
GH	11	0	0	0
	11	3	0	0
	11	6	0	0
	8	12	0	0
Control: No GH (Year 1)	10	0	0	0
	10	3	0	+ 6.3
	10	6	0	+ 9.0
	8	12	0	- 10.0
Control: GH Treatment (Year 2)	6	15	0	- 24.8
	5	18	0	+ 20.1
	5	24	0	+ 8.7

^A 16 of 21 participants had no detectable viremia over the course of the study (VL < 75 copies/ml).

2 participants had a low but detectable viremia both before and after GH initiation.

Patient 5: VL 381–1936 copies/ml 4 times pre-GH and 4 times during GH (102–1819 copies/ml).

Patient 16: VL 164–303 copies/ml 5 times pre-GH and 4 times during GH (305–797 copies/ml).

1 participant had 1 measurement of low level viremia (VL 146 copies/ml) pre-GH, but not during GH

2 participants had undetectable VL pre-GH and 1 episode of low level viremia during GH (< 140 copies/ml).

^B GH did not have a significant effect on viremia at any time point in this study. However, due to the paucity of detectable viremia in this study, no firm conclusions can be made about the effect of GH on HIV viremia or about the impact of HIV viremia on GH effects on the immune system.