



**Figure S1.** Landmarks used in this study. For landmark definition see Table S3. The figure represents a seventh cervical vertebra (C7) in left lateral (top) and cranial (bottom) views.

**SOM Table S1**

Extant hominoid sample used in this study organized by species, sex and provenance institution.

Species	Zool-						Total
	MusH	MNHN	NHM	RMCA	NMCN	MAUV	
<i>Homo sapiens</i>	8 ♂						
	4 ♀						
	42 IS						<b>54</b>
<i>Pan troglodytes</i>	1 ♂	3 ♂	1 ♂	8 ♂	3 ♂	10 ♂	
		5 ♀	1 ♀	3 ♀	3 ♀	10 ♀	
				10 IS			<b>58</b>
<i>Gorilla gorilla</i>	1 ♂	7 ♂	2 ♂	1 ♂	3 ♂	4 ♂	
	1 ♀		5 ♀		4 ♀	1 ♀	<b>29</b>
<b>Total</b>							<b>141</b>

Institutions: MusH (Musée de l'Homme collection, Paris); Zool-MNHN (Dept. Zoology, Muséum national d'Histoire naturelle, Paris); RMCA (Royal Museum for Central Africa, Tervuren); NHM (Natural History Museum, London); NMCN (Nat-Museu de Ciències Naturals, Barcelona); MAUV (Museo anatómico, Universidad de Valladolid). Sex: ♂=males; ♀=females; IS=indeterminate sex.

**SOM Table S2**

Landmark definitions.

<b>Landmarks</b>	<b>Mid-sagittal/Side</b>	<b>Definitions</b>
L01	MS	The most ventral point at the caudal surface of the vertebral body.
L02	MS	The most ventral point at the cranial surface of the vertebral body.
L03	MS	The most ventral point of the vertebral foramen, taken at the most dorsal point at the cranial surface of the vertebral body.
L04	MS	The most dorsal point of the vertebral foramen (taken at the cranial intersection between the laminae).
L05	MS	The most dorsal point of the spinous process. (If the tip of the spinous process is forked, the missing space will be filled with modelling clay in order to take the most dorsal point in the mid-sagittal plane).
L06	Left	The most lateral edge of the superior articular facets.
L07	Left	The most medial edge of the superior articular facets.
L08	Left	Caudal edge of the superior articular facet located on the perpendicular line to the line defined by L06 and L07. The perpendicular point related to the mediolateral line on the caudal edge of the superior articular facet.
L09	Left	Cranial edge of the superior articular facet located on the perpendicular line to the line defined by L06 and L07. The perpendicular point related to the mediolateral line on the cranial edge of the superior articular facet.
L10	Left	Center of the superior articular facet, calculated as the intersection of the lines defined between L06 and L07; and L08 and L09. previously taken midlines of the superior articular facets.
L11	Right	The most lateral edge of the superior articular facets.
L12	Right	The most medial edge of the superior articular facets.
L13	Right	The perpendicular point related to the mediolateral line on the caudal edge of the superior articular facet. Caudal edge of the superior articular facet located on the perpendicular line to the line defined by L11 and L12.
L14	Right	Cranial edge of the superior articular facet located on the perpendicular line to the line defined by L11 and L12. The perpendicular point related to the mediolateral line on the cranial edge of the superior articular facet.
L15	Right	Center of the superior articular facets, calculated intersection of the lines defined between L11 and L12; and L13 and L14.

**SOM Table S3**

Global integration values from raw data and from residuals in Hominine subaxial cervical spine (C3-C7)<sup>a</sup>.

Data	Vertebra	<i>H. sapiens</i>	<i>P. troglodytes</i>	<i>G. gorilla</i>
<b>Raw data</b>	<b>C3</b>	-1.372	-1.555	-1.762
	<b>C4</b>	-1.485	-1.457	-1.531
	<b>C5</b>	-1.442	-1.384	-1.414
	<b>C6</b>	-1.426	-1.280	-1.589
	<b>C7</b>	-1.061	-1.294	-1.330
<b>Residuals</b>	<b>C3</b>	-1.376	-1.475	-1.625
	<b>C4</b>	-1.468	-1.413	-1.475
	<b>C5</b>	-1.458	-1.368	-1.353
	<b>C6</b>	-1.418	-1.264	-1.405
	<b>C7</b>	-1.059	-1.265	-1.191

Values lower than -1 (e.g. -1.3) indicate that the element is globally integrated. Thus, all subaxial cervical vertebrae from raw data and from residuals are globally integrated.

**SOM Table S4**

Three modules analyses. Results for the modularity and integration tests in the Hominine subaxial cervical spine (C3-C7) from raw data and from residuals.

Data	Vertebra	<i>H. sapiens</i>		<i>Pan troglodytes</i>		<i>Gorilla gorilla</i>	
		CR	PLScorr	CR	PLScorr	CR	PLScorr
<b>Raw data</b>	<b>C3</b>	1.067	0.884**	0.983	0.888**	1.046*	0.797**
	<b>C4</b>	1.027	0.859**	1.252	0.932**	1.161	0.801**
	<b>C5</b>	1.063	0.886**	1.149	0.844**	1.087	0.820**
	<b>C6</b>	1.022	0.903**	1.200	0.908**	0.992*	0.783**
	<b>C7</b>	1.181	0.871**	1.218	0.940**	1.127	0.822**
<b>Residuals</b>	<b>C3</b>	1.067	0.885**	1.023	0.912**	1.186	0.890**
	<b>C4</b>	1.021	0.863**	1.227	0.932**	1.180	0.867**
	<b>C5</b>	1.08	0.889**	1.150	0.845**	1.207	0.843**
	<b>C6</b>	1.025	0.894**	1.203	0.903**	1.136	0.822**
	<b>C7</b>	1.198	0.878**	1.222	0.941**	1.169	0.873**

CR= Covariance ratio coefficients; PLScorr=Partial least squares correlation coefficients. Non-significant CR values that are >1 imply that the structures are not modularized and therefore might evidence a relative integration of the modules. Significant PLScorr values imply that anatomical parts are relatively integrated.

\**p*-value<0.05; \*\**p*-value<0.01.

**SOM Table S5**

Results for the modularity and integration tests in the Hominine subaxial cervical spine (C3-C7) from raw data and from residuals taking into account two modules: vertebral body and neural arch (i.e. spinous process and superior articular processes).

Data	Vertebra	<i>H. sapiens</i>		<i>Pan troglodytes</i>		<i>Gorilla gorilla</i>	
		CR	PLScorr	CR	PLScorr	CR	PLScorr
Raw data	C3	0.999	0.856**	0.853	0.88**	0.861**	0.720**
	C4	0.938	0.818**	0.939*	0.95**	0.751**	0.714**
	C5	0.937	0.864**	0.89*	0.799**	0.744*	0.713**
	C6	0.877*	0.926**	0.937*	0.878**	0.718*	0.693**
	C7	1.017	0.894**	1.015	0.952**	0.782*	0.769**
Residuals	C3	0.976	0.859**	0.895	0.915**	1.067	0.873**
	C4	0.928	0.816**	0.965	0.954**	0.889*	0.829**
	C5	0.942	0.872**	0.893*	0.802**	0.867*	0.786**
	C6	0.881**	0.927**	0.940	0.872**	0.809**	0.793**
	C7	1.026	0.932**	1.008	0.953**	0.759*	0.854**

CR= Covariance ratio coefficients; PLScorr=Partial least squares correlation coefficients. Non-significant CR values that are >1 imply that the structures are not modularized and therefore might evidence a relative integration of the modules. Significant PLScorr values imply that anatomical parts are relatively integrated.

\**p*-value<0.05; \*\**p*-value<0.01.

SOM Table S6

Covariation from raw data and from residuals across cervical vertebrae in Homininea<sup>a</sup>.

Data	Taxon	Vertebra	C3	C4	C5	C6
Raw data	<i>H. sapiens</i>	C4	<b>0.748**</b>			
		C5	0.658	0.737**		
		C6	0.618	0.608	0.740**	
		C7	0.709*	0.613	0.713*	0.693*
	<i>P. troglodytes</i>	C4	<b>0.894**</b>			
		C5	0.816**	0.857**		
		C6	0.812**	0.783**	0.818**	
		C7	0.762**	0.728**	0.711**	0.835**
	<i>G. gorilla</i>	C4	0.679**			
		C5	0.697**	0.884**		
		C6	0.612*	0.811**	0.917**	
		C7	0.586	0.779**	0.866**	<b>0.940**</b>
Residuals	<i>H. sapiens</i>	C4	0.753**			
		C5	0.677*	0.756**		
		C6	0.627	0.609	0.728**	
		C7	0.714	0.588	0.694*	0.718*
	<i>P. troglodytes</i>	C4	0.887**			
		C5	0.810**	0.863**		
		C6	0.818**	0.792**	0.822**	
		C7	0.687*	0.710**	0.711**	0.842**
	<i>G. gorilla</i>	C4	0.766**			
		C5	0.724**	0.790**		
		C6	0.628	0.742*	0.883**	
		C7	0.624	0.672	0.781**	0.915**

<sup>a</sup>Values represented in PLScorr coefficients.

\* =  $p$  value < 0.05; \*\* =  $p$  value < 0.01.