



Work Package Number: WP4

Deliverable Number: D4.2

Agreed protocols for histochemistry, IHC and histomorphometry of cartilage and bone

<i>Histochemical, Immunohistochemical and Biochemical Phenotyping of Animal Models</i>	
Unit:	Strain name: Genetic variant: RSD: CSD: Age (range)

<i>Histology of Tissue Sections</i>					
Age(s)	Organ	Histological staining	Histochemistry	IHC	Other

<i>Histomorphometry: Structural parameters</i>						
Bone Segment:						
Age(s), sex	BV/TV (%)	Tb.N (n/mm)	Tb.Th (µm)	Tb.Sp (µm)	Other	Other



<i>Histomorphometry: Bone cellular variables</i>						
Bone Segment:						
Age(s), sex	OcN/B.Pm (n/mm)	OcN/T.Area (n/mm ²)	OcS/BS %	ObN/B.Pm	ObS/BS %	Other

<i>Histomorphometry: Bone dynamic variables</i>						
Bone Segment:						
Age(s), sex	ES/BS (%)	BFR/BS (µm ³ /(µm ² /day))	MAR (µm/day)	OS/BS (%)	BM Adipocyte density(mm)	Other

<i>Histomorphometry: Growth plate variables</i>						
Bone Segment:						
Age(s)	Growth plate width (µm)	Resting zone (µm)	Proliferative zone width (µm)	Hypertrophic zone (µm)	Calcified zone (µm)	Other

<i>Growth plate chondrocyte physiology</i>									
Bone Segment:									
Age(s)	Chondrocyte proliferation			Chondrocyte apoptosis			Chondrocyte differentiation		
	<i>BrdU</i>	<i>PCNA</i>	<i>Other</i>	<i>TUNEL</i>	<i>Caspase</i>	<i>Other</i>	<i>Collagen Type II</i>	<i>Collagen type X</i>	<i>Other</i>

<i>Histomorphometry: Articular cartilage variables</i>

SYBIL Project 602300. The SYBIL Project is funded under the European Commission Seventh Framework Programme, grant number 602300, Theme HEALTH.2013.2.1.1-1



Bone Segment:					
Age(s)	Cartilage thickness (CT, μm)	Proteoglycan content in cell or explant (PC, %)	Chondrocyte density (CD, $\text{n}^\circ\text{mm}^2$)	Subchondral bone plate thickness (SBPT, μm)	Other

<i>Histomorphometry: Articular cartilage variables</i>				
Bone Segment:				
Age(s)	Cartilage Destruction Score (OARSI)	Synovial Inflammation Score	Apoptosis	Other

<i>Serum Markers of Bone Turnover</i>						
Age(s), sex	CTX I	TRAcP	BALP	PINP1	OCN	Other

Bone parameters are according to:

Standardized nomenclature, symbols, and units for bone histomorphometry: a 2012 update of the report of the ASBMR Histomorphometry Nomenclature Committee.

Dempster DW, Compston JE, Drezner MK, Glorieux FH, Kanis JA, Malluche H, Meunier PJ, Ott SM, Recker RR, Parfitt AM. J Bone Miner Res. 2013 Jan;28(1):2-17. doi: 10.1002/jbmr.1805.



Legend:

OcN: osteoclast number

B.Pm: bone perimeter

OcS: osteoclast surface

BS: bone surface

ObN: osteoblast number

ObS: osteoblast surface

ES: eroded surface

BFR: bone formation rate

MAR: mineral apposition rate

OS: osteoid surface

BM: bone marrow

BV: bone volume

TV: trabecular volume

Tb.N: trabecular number

Tb.Th: trabecular thickness

Tb.Sp: trabecular space