

Supplementary Table S1: List of abbreviations of all 92 biomarkers

Abbreviation	Full name
AP-N	Aminopeptidase N
AZU	Azurocidin
BLM hydrolase	Bleomycin hydrolase
CCL15	C-C motif chemokine 15
CCL16	C-C motif chemokine 16
CCL24	C-C motif chemokine 24
CXCL16	C-X-C motif chemokine 16
CDH5	Cadherin-5
CPA1	Carboxypeptidase A1
CPB1	Carboxypeptidase B
CASP-3	Caspase-3
CTSD	Cathepsin D
CTSZ	Cathepsin Z
ALCAM	CD166 antigen
CHI3L1	Chitinase-3-like protein 1
CHIT1	Chitotriosidase-1
COL1A1	Collagen alpha-1(I) chain
CD93	Complement component C1q receptor
CNTN1	Contactin-1
CSTB	Cystatin-B
SELE	E-selectin
PI3	Elafin
EPHB4	Ephrin type-B receptor 4
EGFR	Epidermal growth factor receptor
Ep-CAM	Epithelial cell adhesion molecule
FABP4	Fatty acid-binding protein, adipocyte
Gal-3	Galectin-3
Gal-4	Galectin-4
GRN	Granulins
GDF-15	Growth/differentiation factor 15
IGFBP-1	Insulin-like growth factor-binding protein 1
IGFBP-2	Insulin-like growth factor-binding protein 2
IGFBP-7	Insulin-like growth factor-binding protein 7
ITGB2	Integrin beta-2
ICAM-2	Intercellular adhesion molecule 2
IL-1RT1	Interleukin-1 receptor type 1
IL-1RT2	Interleukin-1 receptor type 2
IL-17RA	Interleukin-17 receptor A
IL-18BP	Interleukin-18-binding protein
IL2-RA	Interleukin-2 receptor subunit alpha
IL-6RA	Interleukin-6 receptor subunit alpha
JAM-A	Junctional adhesion molecule A
KLK6	Kallikrein-6
LDL receptor	Low-density lipoprotein receptor
LTBR	Lymphotoxin-beta receptor
MEPE	Matrix extracellular phosphoglycoprotein
MMP-2	Matrix metalloproteinase-2
MMP-3	Matrix metalloproteinase-3
MMP-9	Matrix metalloproteinase-9
TIMP4	Metalloproteinase inhibitor 4
MCP-1	Monocyte chemotactic protein 1
PRTN3	Myeloblastin
MPO	Myeloperoxidase
MB	Myoglobin
NT-proBNP	N-terminal prohormone brain natriuretic peptide
Notch 3	Neurogenic locus notch homolog protein 3

OPN	Osteopontin
OPG	Osteoprotegerin
SELP	P-selectin
PON3	Paraoxonase
PGLYRP1	Peptidoglycan recognition protein 1
PLC	Perlecan
PAI	Plasminogen activator inhibitor 1
PECAM-1	Platelet endothelial cell adhesion molecule
GP6	Platelet glycoprotein VI
PDGF subunit A	Platelet-derived growth factor subunit A
PCSK9	Proprotein convertase subtilisin/kexin type 9
DLK-1	Protein delta homolog 1
PSP-D	Pulmonary surfactant-associated protein D
RETN	Resistin
RARRES2	Retinoic acid receptor responder protein 2
CD163	Scavenger receptor cysteine-rich type 1 protein M130
SCGB3A2	Secretoglobin family 3A member 2
SPON1	Spondin-1
ST2	ST2 protein
TR-AP	Tartrate-resistant acid phosphatase type 5
TFPI	Tissue factor pathway inhibitor
t-PA	Tissue-type plasminogen activator
TR	Transferrin receptor protein 1
TFF3	Trefoil factor 3
TLT-2	Trem-like transcript 2 protein
TNFSF13B	Tumor necrosis factor ligand superfamily member 13B
TNF-R1	Tumor necrosis factor receptor 1
TNF-R2	Tumor necrosis factor receptor 2
TNFRSF10C	Tumor necrosis factor receptor superfamily member 10C
TNFRSF14	Tumor necrosis factor receptor superfamily member 14
FAS	Tumor necrosis factor receptor superfamily member 6
AXL	Tyrosine-protein kinase receptor UFO
SHPS-1	Tyrosine-protein phosphatase non-receptor type substrate 1
U-PAR	Urokinase plasminogen activator surface receptor
uPA	Urokinase-type plasminogen activator
vWF	von Willebrand factor

Supplementary Table S2: Comparison of all biomarkers pre- and post-bariatric surgery

Abbreviation	Pre-surgery (n=72)	Post-surgery (n=72)	Relative changes	p-value
AP-N	36.6 [33.1-41.8]	37.4 [33.3-42.3]	2.2%	0.27
AZU	6.1 [5.0-8.0]	5.3 [4.6-6.5]	-13.1%	<0.001*
BLM hydrolase	8.0 [6.7-9.5]	6.7 [5.4-7.8]	-16.3%	<0.001*
CCL15	117 [103-154]	135 [115-172]	15.3%	0.75
CCL16	126 [91-158]	119 [92-147]	-5.6%	<0.001*
CCL24	40.9 [24.4-67.5]	40.8 [26.4-69.0]	-0.2%	0.75
CXCL16	48.2 [43.2-55.9]	43.0 [38.8-49.9]	-10.8%	<0.001*
CDH5	26.1 [22.0-29.7]	21.8 [18.9-25.9]	-16.5%	<0.001*
CPA1	74.1 [51.3-96.8]	70.7 [53.3-102.6]	-4.6%	0.92
CPB1	65.5 [45.4-87.2]	63.2 [49.0-89.8]	-3.5%	0.26
CASP-3	529 [335-751]	336 [198-532]	-36.5%	<0.001*
CTSD	6.5 [5.5-8.4]	5.5 [4.7-6.7]	-15.4%	<0.001*
CTSZ	50.9 [42.6-63.5]	47.2 [42.6-53.5]	-7.3%	<0.001*
ALCAM	224 [205-251]	207 [181-228]	-7.6%	<0.001*
CHI3L1	17.3 [11.9-26.1]	18.0 [11.3-26.9]	4.0%	0.49
CHIT1	29.7 [19.4-40.3]	28.8 [19.3-44.8]	-3.0%	0.15
COL1A1	8.6 [7.2-10.1]	11.7 [9.8-13.3]	36.0%	<0.001*
CD93	2349 [2074-2722]	2239 [1842-2415]	-4.7%	0.001*
CNTN1	29.3 [24.9-34.3]	31.6 [26.1-36.1]	7.8%	<0.001*
CSTB	21.1 [16.1-28.6]	18.3 [14.1-21.2]	-13.3%	<0.001*
SELE	6035 [4054-7535]	3604 [2477-4478]	-40.3%	<0.001*
PI3	5.4 [4.5-7.3]	5.3 [4.2-7.0]	-1.9%	0.019*
EPHB4	51.9 [47.4-59.9]	52.5 [47.2-59.8]	1.2%	0.22
EGFR	11.3 [10.5-12.5]	10.0 [9.1-10.7]	-11.5%	<0.001*
Ep-CAM	56.6 [28.4-94.1]	107.3 [58.5-204.4]	89.6%	<0.001*
FABP4	98.3 [60.9-135.9]	68.8 [47.9-85.2]	-30.0%	<0.001*
Gal-3	11.5 [10.4-12.9]	11.2 [10.1-12.6]	-2.6%	0.35
Gal-4	15.6 [12.7-19.8]	19.6 [14.9-25.9]	25.6%	0.002*
GRN	57.1 [49.8-66.1]	57.2 [47.5-63.8]	0.2%	0.003*
GDF-15	47.6 [38.5-59.7]	51.8 [40.1-63.1]	8.8%	0.048
IGFBP-1	13.4 [6.6-23.9]	36.8 [20.8-52.4]	174.6%	<0.001*
IGFBP-2	450 [338-641]	188 [136-286]	-58.2%	<0.001*
IGFBP-7	270 [236-304]	252 [222-294]	-6.7%	0.09
ITGB2	188 [136-286]	450 [337-641]	139.4%	<0.001*
ICAM-2	53.8 [44.8-61.3]	58.1 [48.3-68.4]	9.0%	<0.001*
IL-1RT1	93.2 [79.8-105.7]	96.3 [88.7-109.8]	3.3%	<0.001*
IL-1RT2	48.6 [40.8-54.5]	40.3 [33.3-46.6]	-17.1%	<0.001*
IL-17RA	22.1 [18.1-28.9]	19.6 [16.3-25.2]	-11.3%	<0.001*
IL-18BP	71.1 [63.9-81.4]	70.4 [60.5-79.9]	-1.0%	0.007*
IL2-RA	15.0 [11.9-17.7]	13.3 [11.8-17.2]	-11.3%	<0.001*
IL-6RA	5075 [4208-6023]	4850 [4003-5553]	-4.4%	<0.001*
JAM-A	110.2 [74.7-161.9]	84.0 [51.3-127.5]	-23.8%	<0.001*
KLK6	5.9 [5.1-6.8]	6.2 [5.2-6.9]	5.1%	<0.001*
LDL receptor	25.4 [19.5-32.9]	14.9 [11.6-19.8]	-41.3%	<0.001*
LTBR	17.0 [15.3-19.2]	17.0 [14.8-18.8]	0%	0.35
MEPE	71.2 [60.3-88.7]	73.4 [62.3-90.2]	3.1%	0.025*
MMP-2	17.4 [14.9-19.5]	18.8 [16.3-22.4]	8.0%	<0.001*
MMP-3	194 [154-278]	177 [132-234]	-8.8%	0.22
MMP-9	58.8 [40.7-89.8]	49.2 [33.2-61.6]	-16.3%	<0.001*
TIMP4	13.2 [11.4-15.2]	14.2 [11.8-17.0]	7.6%	0.047
MCP-1	17.4 [14.8-21.1]	16.2 [13.3-18.9]	-6.9%	<0.001*
PRTN3	18.2 [14.5-21.6]	16.3 [13.8-18.9]	-10.4%	<0.001*
MPO	11.2 [9.5-13.5]	10.0 [8.6-12.4]	-10.7%	<0.001*
MB	212 [170-292]	163 [130-213]	-23.1%	0.003*

NT-proBNP	11.1 [6.6-16.6]	17.5 [11.2-24.6]	57.7%	0.010*
Notch 3	50.2 [41.2-59.1]	52.6 [42.5-63.3]	4.9%	0.021*
OPN	198 [157-248]	315 [257-400]	59.1%	<0.001*
OPG	16.7 [13.6-18.35]	15.7 [14.1-18.3]	-6.0%	0.12
SELP	2615 [1877-3616]	1841 [1210-2617]	-29.6%	<0.001*
PON3	107 [77-156]	139 [106-159]	29.9%	<0.001*
PGLYRP1	188 [154-228]	178 [148-204]	-5.3%	<0.001*
PLC	299 [266-337]	284 [249-309]	-5.0%	<0.001*
PAI	77.6 [53.7-109.1]	44.5 [31.0-64.9]	-42.7%	<0.001*
PECAM-1	70.4 [52.6-92.3]	54.8 [39.6-75.0]	-22.2%	<0.001*
GP6	17.4 [11.5-23.2]	13.2 [8.7-18.4]	-24.1%	<0.001*
PDGF subunit A	25.2 [18.7-36.1]	17.6 [13.2-25.9]	-30.2%	<0.001*
PCSK9	8.9 [7.4-10.5]	7.7 [7.0-8.8]	-13.5%	<0.001*
DLK-1	53.8 [36.5-66.9]	78.7 [57.7-97.1]	45.3%	<0.001*
PSP-D	7.0 [5.4-10.3]	6.5 [4.5-8.1]	-7.1%	0.007*
RETN	82.0 [68.5-100.8]	83.0 [62.6-97.2]	1.2%	0.037*
RARRES2	4461 [3888-4950]	3489 [3100-4032]	-21.8%	<0.001*
CD163	299.4 [249.6-389.6]	220.5 [175.9-301.6]	-26.4%	<0.001*
SCGB3A2	5.4 [4.1-7.8]	5.9 [4.8-8.7]	9.3%	0.009*
SPON1	4.5 [4.1-5.1]	4.9 [4.2-5.5]	8.9%	0.024*
ST2	23.3 [18.3-29.3]	24.2 [18.1-30.3]	3.9%	0.45
TR-AP	15.3 [13.2-17.7]	14.7 [12.8-16.8]	-3.9%	0.009*
TFPI	736 [654-847]	674 [578-780]	-12.1%	<0.001*
t-PA	111 [84-155]	74 [61-100]	-33.3%	<0.001*
TR	59.5 [44.1-83.9]	45.2 [37.8-56.6]	-24.0%	<0.001*
TFF3	36.9 [31.7-46.0]	43.5 [38.0-55.0]	17.9%	0.67
TLT-2	61.9 [52.7-73.6]	52.8 [43.8-62.3]	-14.7%	<0.001*
TNFSF13B	168 [142-189]	142 [121-159]	-15.5%	<0.001*
TNF-R1	133 [115-150]	122 [101-138]	-8.3%	<0.001*
TNF-R2	66.7 [55.3-77.8]	61.0 [52.1-70.4]	-8.5%	<0.001*
TNFRSF10C	155 [122-202]	155 [103-203]	0%	<0.001*
TNFRSF14	36.1 [30.7-42.1]	34.0 [29.8-39.4]	-5.8%	<0.001*
FAS	76.4 [67.4-87.2]	71.5 [62.0-81.7]	-6.4%	0.0013*
AXL	637 [553-726]	588 [507-676]	-7.7%	0.012*
SHPS-1	15.0 [12.9-18.4]	15.6 [12.9-18.0]	4.0%	0.51
U-PAR	48.8 [40.9-60.1]	45.8 [40.5-52.7]	-6.1%	<0.001*
uPA	29.9 [26.2-34.7]	26.6 [21.8-31.0]	-11.0%	<0.001*
vWF	153 [108-216]	149 [122-196]	-2.6%	0.07

Values represent median [Q1-Q3], all units are NPX.

Relative changes of all biomarkers from pre- to one year post-bariatric surgery were calculated by subtracting the median value of biomarkers pre-surgery from the value of the biomarkers post-surgery, and dividing the obtained difference by the median value of the biomarkers pre-surgery.

P-values displayed for changes in biomarker levels between pre- and post-surgery were obtained by univariable linear mixed modeling.

* Significant after Benjamini–Hochberg correction.

Supplementary Table S3: Biomarkers selected by spls-DA analysis

TLT2
GP6
CASP3
SELP
JAMA
PECAM1
PDGFsubunitA