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LIPID
METABOLISM

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In the community of lipid droplet biology research, your antibodies are highly appreciated and many papers in this field rely on PROGEN antibodies.

*Prof. Dr. Matthijs Hesselink,
Maastricht University Medical Center*

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TACKLING

LIPID
METABOLISM



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& check out our other
lipid metabolism anti-
bodies!



- Against all 5 perilipin subtypes
- For WB, IHC, IF, and ICC
- For use in transgenic knockout mice
- Independently validated
- Useful markers for pathologies

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Perilipins - useful components of lipid droplets

Lipid droplets (LD) are highly recognized in biomedical research and pathology. These organelles are found in nearly all cell types and tissues and the composition of their lipidic material varies strongly, depending on their storage or transport function. LDs are linked to several diseases like diabetes, obesity, liposarcoma, atherosclerosis, lipid droplet biogenesis, viral and bacterial infection. The perilipin protein family is associated with lipid droplets in various tissues and its role in lipid metabolism in health and disease is under intense investigation (*relevant publications see suggested readings*).

Tissue-specific expression of human perilipins (PLIN1 – PLIN5)

Perilipin 1 (PLIN1)

- on the surface of intracellular lipid storage droplets
- expressed in adrenal gland, adipocytes of white/brown adipose tissue
- cell culture e.g. 3T3-L1 adipocytes, steroidogenic adrenal cortical, Leydig cells
- useful pathological marker (de novo expressed in hepatocyte steatogenesis)

Perilipin 2 (PLIN2)

- or adipocyte differentiation-related protein (ADRP) / adipophilin
- tightly associated with the LD-surface
 - enhanced expression as marker for pathologies with increased LD accumulation e.g. atheroma, steatosis, obesity and certain cases of liposarcoma
 - potent marker for atherosclerosis

Perilipin 3 (PLIN3)

- or TIP47 / placental protein 17 (PP17) / M6PR binding protein 1 (MP6PRBP1)
- sequence similarity to PLIN2
 - binds to lipid storage droplets
 - Might contribute to LD formation and stabilization

Perilipin 4 (PLIN4)

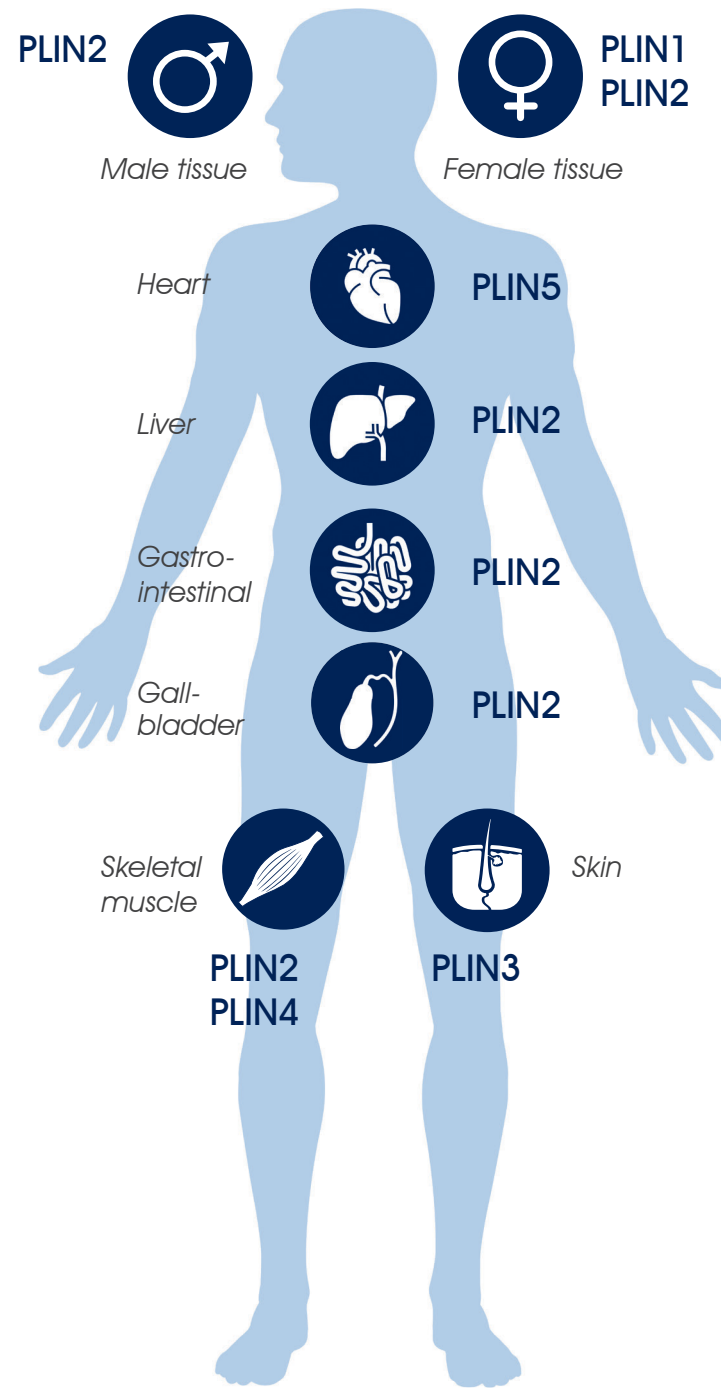
- or S3-12
- selectively expressed in adipocytes in middle-late stage of differentiation
 - role in uptake of lipids and hydrophobic substances

Perilipin 5 (PLIN5)

- or OXPAT / myocardial lipid droplet protein (MDLP)
- functionally associated with lipid storage droplets in muscle cell tissue
 - role in energy supply to muscle cell mitochondria

Suggested readings

- Heid H et al., 2013, PLoS One 8:e63061
- Fernández-Rojo M A et al., 2013, Cell Rep 4:238–247
- Kuramoto K et al., 2014, Mol Cell Biol 34:2721–2731
- Barquissau V et al., 2016, Mol Metab 5:352–366
- Gallardo-Montejano V I et al., 2016, Nat Commun 7:1272
- Inoue J et al., 2016, Sci Rep 6:32750
- Kaushik S & Cuervo A M, 2016, Autophagy 12:432–438
- Furukawa S, Nagaike M & Ozaki K, 2017, J Toxicol Pathol 30:79–107
- Gemmink A et al., 2017, J Physiol 596:857–868



Information based on www.proteinatlas.org

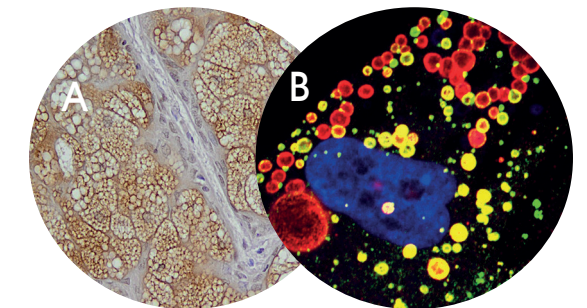
Trusted perilipin antibodies for lipid metabolism research

Specific antibodies against the different perilipins are established LD-markers and useful tools to study lipid metabolism. PROGEN offers a selection of validated antibodies against all five perilipin subtypes (PLIN1 – PLIN5) for a number of applications (WB, IHC, IF and ICC) in different formats.

Antigen	Product Specifications	Cat.
Perilipin 1 (human C-terminus)	gp*, polyclonal, serum	GP33
Perilipin 1 (human N-terminus)	mouse mAb**, clone PERI 112.17, supernatant	651156
Perilipin 1 (mouse/rat N-terminus)	gp, polyclonal serum	GP29
Perilipin 2 (mouse C-terminus)	gp, polyclonal serum	GP43
Perilipin 2 (human C-terminus)	gp, polyclonal serum	GP41
Perilipin 2 (mouse N-terminus)	gp, polyclonal serum	GP42
Perilipin 2 (human N-term. aa 1-16)	gp, polyclonal serum	GP46
Perilipin 2 (human/mouse N-termin. aa 1-29)	gp, polyclonal serum	GP40
Perilipin 2 (human N-term. aa 6-27)	gp, polyclonal serum	GP47
Perilipin 2 (human N-terminus)	mouse mAb, clone AP125, supernatant	651102
Perilipin 2 (human N-terminus)	mouse mAb, clone AP125, purified, lyophilized	610102
Perilipin 3 (human N-terminus)	mouse mAb, clone 49.19, supernatant	651168
Perilipin 3 (mouse C-terminus)	gp, polyclonal serum	GP37
Perilipin 3 (mouse N-terminus)	gp, polyclonal serum	GP36
Perilipin 3 (human C-terminus)	gp, polyclonal serum	GP32
Perilipin 3 (human N-terminus)	gp, polyclonal serum	GP30
Perilipin 4 (human C-terminus)	gp, polyclonal serum	GP34
Perilipin 4 (human N-terminus)	gp, polyclonal serum	GP38
Perilipin 5 (human C-terminus)	mouse mAb, clone MLDP-130.336, supernatant	651176
Perilipin 5 (human C-terminus)	gp, polyclonal serum	GP31
Perilipin 5 (human N-terminus)	gp, polyclonal serum	GP44
Perilipin 1–5	gp, polyclonal sera	70010
Perilipin 2, 3, 5	2: mouse mAb, 3 & 5: gp, polyclonal sera	70011
Perilipin 1, 2, 5	2: mouse mAb, 1 & 5: gp, polyclonal sera	70012

*gp: guinea pig, **mAb: monoclonal antibody

Labeling of PLIN1 and PLIN2 in lipid droplets



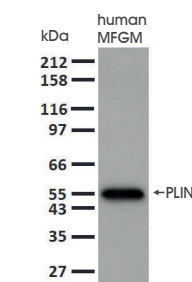
A) Perilipin 2 IHC of human skin with the polyclonal PLIN2 antibody (Cat. No. GP40)

(Image courtesy of J. Heß, University Hospital Heidelberg)

B) IF double-staining of perilipin 1 (red, Cat. No. 651156) and perilipin 2 (green, Cat. No. GP41) in human preadipose cells, DAPI-labeled nucleus (blue)

(Image courtesy of W. Franke, DKFZ Heidelberg)

Labeling of PLIN2 in MFGM protein extract



Specific recognition of perilipin 2 on WB of human MFGM (milk fat globule membrane) extract using PROGEN's mouse monoclonal anti-PLIN2 (N-terminus) antibody (Cat. No. 610102)

NEW! SAVE TIME & MONEY – TEST OUR PLIN-ANTIBODIES SAMPLE SETS!

- common combinations of PLIN-antibodies for comprehensive experiments (PLIN1-5, PLIN2,3,5, or PLIN1,2,5)
- ready-to-use for IHC
- sample sizes: each antibody 600µL (enough for e.g. 6-12 IHC sections)
- attractive pricing: set price less than single products