

FABP2

Fatty acid-binding protein 2 (FABP2) also known as **Intestinal-type fatty acid-binding protein** (I-FABP) is a protein that in humans is encoded by the *FABP2* gene.^[1]

1 Function

The intracellular fatty acid-binding proteins (FABPs) belong to a multigene family with nearly twenty identified members. FABPs are divided into at least three distinct types, namely the hepatic-, intestinal- and cardiac-type. They form 14-15 kDa proteins and are thought to participate in the uptake, intracellular metabolism and/or transport of long-chain fatty acids. They may also be responsible in the modulation of cell growth and proliferation. Intestinal fatty acid-binding protein 2 gene contains four exons and is an abundant cytosolic protein in small intestine epithelial cells.^[1]

2 Clinical significance

This gene has a polymorphism at codon 54 that identified an alanine-encoding allele and a threonine-encoding allele. Thr-54 protein is associated with increased fat oxidation and insulin resistance.^[1]

3 References

- [1] "Entrez Gene: FABP2 fatty acid binding protein 2, intestinal".

4 Further reading

- Kaikaus RM, Bass NM, Ockner RK (1990). "Functions of fatty acid binding proteins.". *Experientia* **46** (6): 617–30. doi:10.1007/BF01939701. PMID 2193826.
- Glatz JF, Luiken JJ, van Nieuwenhoven FA, Van der Vusse GJ (1997). "Molecular mechanism of cellular uptake and intracellular translocation of fatty acids.". *Prostaglandins Leukot. Essent. Fatty Acids* **57** (1): 3–9. doi:10.1016/S0952-3278(97)90485-3. PMID 9250601.

- Storch J, Thumser AE (2000). "The fatty acid transport function of fatty acid-binding proteins.". *Biochim. Biophys. Acta* **1486** (1): 28–44. doi:10.1016/s1388-1981(00)00046-9. PMID 10856711.
- Edwards A; Hammond HA; Jin L et al. (1992). "Genetic variation at five trimeric and tetrameric tandem repeat loci in four human population groups". *Genomics* **12** (2): 241–53. doi:10.1016/0888-7543(92)90371-X. PMID 1740333.
- Polymeropoulos MH, Rath DS, Xiao H, Merrill CR (1991). "Trinucleotide repeat polymorphism at the human intestinal fatty acid binding protein gene (FABP2)". *Nucleic Acids Res.* **18** (23): 7198. doi:10.1093/nar/18.23.7198-a. PMC 332847. PMID 2263509.
- Sweetser DA; Birkenmeier EH; Klisak IJ et al. (1987). "The human and rodent intestinal fatty acid binding protein genes. A comparative analysis of their structure, expression, and linkage relationships". *J. Biol. Chem.* **262** (33): 16060–71. PMID 2824476.
- Lowe JB; Boguski MS; Sweetser DA et al. (1985). "Human liver fatty acid binding protein. Isolation of a full length cDNA and comparative sequence analyses of orthologous and paralogous proteins". *J. Biol. Chem.* **260** (6): 3413–7. PMID 3838313.
- Baier LJ; Sacchettini JC; Knowler WC et al. (1995). "An amino acid substitution in the human intestinal fatty acid binding protein is associated with increased fatty acid binding, increased fat oxidation, and insulin resistance". *J. Clin. Invest.* **95** (3): 1281–7. doi:10.1172/JCI117778. PMC 441467. PMID 7883976.
- Goold RD; diSibio GL; Xu H et al. (1993). "The development of sequence-tagged sites for human chromosome 4". *Hum. Mol. Genet.* **2** (8): 1271–88. doi:10.1093/hmg/2.8.1271. PMID 8401509.
- Prochazka M; Lillioja S; Tait JF et al. (1993). "Linkage of chromosomal markers on 4q with a putative gene determining maximal insulin action in Pima Indians". *Diabetes* **42** (4): 514–9. doi:10.2337/diabetes.42.4.514. PMID 8454101.

- Hegele RA; Harris SB; Hanley AJ et al. (1997). “Genetic variation of intestinal fatty acid-binding protein associated with variation in body mass in aboriginal Canadians”. *J. Clin. Endocrinol. Metab.* **81** (12): 4334–7. doi:10.1210/jc.81.12.4334. PMID 8954037.
- Zhang F; Lücke C; Baier LJ et al. (1997). “Solution structure of human intestinal fatty acid binding protein: implications for ligand entry and exit”. *J. Biomol. NMR* **9** (3): 213–28. doi:10.1023/A:1018666522787. PMID 9204553.
- Darimont C; Gradoux N; Cumin F et al. (1998). “Differential regulation of intestinal and liver fatty acid-binding proteins in human intestinal cell line (Caco-2): role of collagen”. *Exp. Cell Res.* **244** (2): 441–7. doi:10.1006/excr.1998.4186. PMID 9806794.
- Darimont C, Gradoux N, de Pover A (1999). “Epidermal growth factor regulates fatty acid uptake and metabolism in Caco-2 cells”. *Am. J. Physiol.* **276** (3 Pt 1): G606–12. PMID 10070036.
- Carlsson M; Orho-Melander M; Hedenbro J et al. (2000). “The T 54 allele of the intestinal fatty acid-binding protein 2 is associated with a parental history of stroke”. *J. Clin. Endocrinol. Metab.* **85** (8): 2801–4. doi:10.1210/jc.85.8.2801. PMID 10946885.
- Chiu KC, Chuang LM, Yoon C (2003). “The A54T polymorphism at the intestinal fatty acid binding protein 2 is associated with insulin resistance in glucose tolerant Caucasians”. *BMC Genet.* **2**: 7. doi:10.1186/1471-2156-2-7. PMC 31346. PMID 11299043.
- Makowski L; Boord JB; Maeda K et al. (2001). “Lack of macrophage fatty-acid-binding protein aP2 protects mice deficient in apolipoprotein E against atherosclerosis”. *Nat. Med.* **7** (6): 699–705. doi:10.1038/89076. PMID 11385507.

5 Text and image sources, contributors, and licenses

5.1 Text

- **FABP2** *Source:* <https://en.wikipedia.org/wiki/FABP2?oldid=651188986> *Contributors:* Rjwilmsi, Kerowyn, Alaibot, Boghog, Protein-BoxBot, DOI bot, Yobot, Citation bot, Citation bot 1, BogBot and Randomnessu

5.2 Images

- **File:DNA_stub.png** *Source:* https://upload.wikimedia.org/wikipedia/commons/6/61/DNA_stub.png *License:* CC-BY-SA-3.0 *Contributors:* Transferred from en.wikipedia; transfer was stated to be made by User:Rockfang. *Original artist:* Original uploader was Alai at en.wikipedia
- **File:PDB_1kzw_EBI.jpg** *Source:* https://upload.wikimedia.org/wikipedia/commons/a/af/PDB_1kzw_EBI.jpg *License:* Public domain *Contributors:* <http://www.ebi.ac.uk/pdbe-srv/view/images/entry/1kzw600.png>, displayed on <http://www.ebi.ac.uk/pdbe-srv/view/entry/1kzw/summary> *Original artist:* Jawahar Swaminathan and MSD staff at the European Bioinformatics Institute
- **File:PDB_1kzx_EBI.jpg** *Source:* https://upload.wikimedia.org/wikipedia/commons/9/95/PDB_1kzx_EBI.jpg *License:* Public domain *Contributors:* <http://www.ebi.ac.uk/pdbe-srv/view/images/entry/1kzx600.png>, displayed on <http://www.ebi.ac.uk/pdbe-srv/view/entry/1kzx/summary> *Original artist:* Jawahar Swaminathan and MSD staff at the European Bioinformatics Institute
- **File:PDB_3ifb_EBI.jpg** *Source:* https://upload.wikimedia.org/wikipedia/commons/2/2b/PDB_3ifb_EBI.jpg *License:* Public domain *Contributors:* <http://www.ebi.ac.uk/pdbe-srv/view/images/entry/3ifb600.png>, displayed on <http://www.ebi.ac.uk/pdbe-srv/view/entry/3ifb/summary> *Original artist:* Jawahar Swaminathan and MSD staff at the European Bioinformatics Institute
- **File:Protein_FABP2_PDB_1kzw.png** *Source:* https://upload.wikimedia.org/wikipedia/commons/d/d6/Protein_FABP2_PDB_1kzw.png *License:* CC BY-SA 3.0 *Contributors:* Own work *Original artist:* Emw

5.3 Content license

- Creative Commons Attribution-Share Alike 3.0