

Table S1. L-FABP secondary structural changes (%) upon binding stearic acid (SA), arachidonic acid (AA), eicosapentaenoic acid (EPA), docosahexaenoic acid (DHA).

RAT L-FABP

	SA	AA	EPA	DHA
Helix reg	-1.4 ± 0.8	24.7 ± 0.5 *#	1.8 ± 0.8 #	18.5 ± 0.7 *#%
Helix dist	-10.4 ± 0.9 *	3.3 ± 0.9 *#	-12.1 ± 1.1 *\$	-0.8 ± 0.8 #%
Helix total	-4.8 ± 1.1 *	16.7 ± 1.0 *#	-3.3 ± 1.5 \$	11.3 ± 1.0 *#%
Sheet reg	-1.4 ± 0.9	-16.3 ± 0.8 *#	-2.5 ± 1.0 \$	-18.9 ± 1.0 *#%
Sheet dist	-0.2 ± 0.3	8.2 ± 0.2 *#	0.2 ± 0.2 \$	2.4 ± 0.2 *#%
Sheet total	-1.0 ± 0.9	-7.9 ± 0.9 *#	1.6 ± 1.0 \$	-11.5 ± 1.1 *#%
Turn	4.3 ± 0.6 *	-20.5 ± 0.5 *#	2.8 ± 0.7 *\$	-5.7 ± 0.7 *#%
Unordered	7.5 ± 0.7 *	-1.3 ± 0.5 #	7.0 ± 0.7 *\$	-0.1 ± 1.1 #%

HUMAN T94T WT

	SA	AA	EPA	DHA
Helix reg	18.3 ± 0.2 *	17.2 ± 0.3 *#	5.0 ± 0.4 *#	4.4 ± 0.3 *#
Helix dist	-5.8 ± 0.4 *	10.7 ± 0.6 *#	1.5 ± 0.4 *#	-5.2 ± 0.5 *#
Helix total	8.5 ± 0.3 *	14.6 ± 0.5 *#	3.6 ± 0.4 *#	0.5 ± 0.5 #
Sheet reg	-2.4 ± 0.5 *	-8.8 ± 0.5 *#	3.6 ± 0.4 *#	2.4 ± 0.7 *#
Sheet dist	-3.8 ± 0.2 *	-3.1 ± 0.1 *#	-2.0 ± 0.1 *#	-1.1 ± 0.2 *#
Sheet total	-2.9 ± 0.7 *	-6.8 ± 0.5 *#	1.6 ± 0.4 #	1.2 ± 0.8 #
Turn	7.1 ± 0.6 *	12.5 ± 0.8 *#	7.2 ± 0.6 *\$	5.6 ± 0.7 *\$
Unordered	-7.5 ± 0.7 *	-11.0 ± 0.9 *#	-9.2 ± 0.8 *	-5.4 ± 0.9 *#

HUMAN T94A VARIANT

	SA	AA	EPA	DHA
Helix reg	3.7 ± 0.4 * †	8.4 ± 0.3 *# †	2.2 ± 0.4 *# †	-1.5 ± 0.1 *#% †
Helix dist	-5.2 ± 0.5 *	1.1 ± 0.6 # †	-2.2 ± 0.5 *# †	7.7 ± 0.5 *#% †
Helix total	0.1 ± 0.6 †	5.5 ± 0.8 *# †	0.4 ± 0.8 \$ †	2.2 ± 0.6 \$
Sheet reg	4.0 ± 0.6 * †	4.0 ± 0.4 * †	2.5 ± 0.6 *	0.5 ± 0.4 #%
Sheet dist	-1.8 ± 0.1 * †	-1.6 ± 0.1 * †	-0.5 ± 0.2 *# †	1.8 ± 0.1 *#% †
Sheet total	1.9 ± 0.6 †	1.9 ± 0.4 †	1.4 ± 0.8	1.0 ± 0.5
Turn	-2.8 ± 0.7 * †	-2.2 ± 0.8 †	-0.9 ± 0.4 †	-1.6 ± 0.5 †
Unordered	0.2 ± 0.6 †	-5.2 ± 1.4 *# †	-1.3 ± 0.6 \$ †	-1.8 ± 0.8 \$ †

*, $P < 0.05$ vs buffer; #, $P < 0.05$ vs SA; \$, $P < 0.05$ vs AA; %, $P < 0.05$ vs EPA; †, $P < 0.05$ vs T94T wt.

Table S2. L-FABP secondary structure changes (%) upon binding to intermediates in TG synthesis.

RAT L-FABP

	O-CoA	LPA	PA	OG	POG
Helix reg	-2.2 ± 0.8 *	13.1 ± 0.8 **	-4.5 ± 0.5 **\$	2.7 ± 0.6 **\$%	4.9 ± 0.7 **\$%@
Helix dist	17.5 ± 0.7 *	25.6 ± 0.7 **	-0.5 ± 0.4 #	-5.6 ± 0.3 **\$%	-5.8 ± 0.4 **\$%
Helix total	6.0 ± 1.4 *	18.3 ± 1.5 **	-2.9 ± 0.9 #	-0.8 ± 0.8 #	0.5 ± 0.9 #
Sheet reg	-5.8 ± 1.1 *	-56.5 ± 1.2 **	-19.2 ± 0.8 **\$	8.3 ± 0.6 **\$%	10.3 ± 0.8 **\$%
Sheet dist	-11.5 ± 0.4 *	-28.3 ± 0.5 **	-5.5 ± 0.2 **\$	1.1 ± 0.2 **\$%	5.0 ± 0.3 **\$%@
Sheet total	-7.9 ± 1.4 *	-46.1 ± 1.6 **	-14.1 ± 0.9 **\$	5.6 ± 0.6 **\$%	8.3 ± 0.9 **\$%
Turn	-9.6 ± 0.4 *	5.5 ± 0.5 **	5.6 ± 0.4 **\$	-1.8 ± 0.4 **\$%	2.0 ± 0.5 **\$%@
Unordered	9.2 ± 0.5 *	23.2 ± 1.0 **	16.6 ± 0.5 **\$	-4.0 ± 0.7 **\$%	-12.8 ± 0.4 **\$%@

HUMAN T94T WT

	O-CoA	LPA	PA	OG	POG
Helix reg	95.9 ± 0.6 *	40.2 ± 0.8 **	104.83 ± 0.8 **\$	22.4 ± 0.6 **\$%	34.9 ± 0.4 **\$%@
Helix dist	44.1 ± 0.4 *	9.3 ± 0.4 **	50.52 ± 0.6 **\$	5.4 ± 0.3 **\$%	12.6 ± 0.2 **\$%@
Helix total	70.2 ± 0.9 *	24.8 ± 1.3 **	77.9 ± 1.3 **\$	14.0 ± 0.7 **\$%	23.8 ± 0.6 **\$%@
Sheet reg	-32.3 ± 1.5 *	-28.7 ± 1.0 **	-66.90 ± 1.0 **\$	-5.1 ± 0.5 **\$%	-14.0 ± 0.5 **\$%@
Sheet dist	-23.6 ± 0.4 *	-15.3 ± 0.4 **	-38.70 ± 0.4 **\$	-1.9 ± 0.2 **\$%	-7.5 ± 0.2 **\$%@
Sheet total	-29.2 ± 1.8 *	-23.9 ± 1.4 **	-56.7 ± 1.4 **\$	-3.9 ± 0.7 **\$%	-11.7 ± 0.6 **\$
Turn	-3.4 ± 0.9 *	-1.0 ± 0.4 #	3.73 ± 0.3 **\$	2.9 ± 0.3 **\$	3.6 ± 0.2 **\$%@
Unordered	-13.0 ± 0.8 *	13.1 ± 0.5 **	11.12 ± 0.7 **\$	-8.2 ± 0.3 **\$%	-6.3 ± 0.5 **\$%@

HUMAN T94A VARIANT

	O-CoA	LPA	PA	OG	POG
Helix reg	95.9 ± 0.7 *	26.9 ± 0.7 ** †	126.3 ± 0.7 **\$ †	29.4 ± 0.6 **\$% †	31.0 ± 0.6 **\$% †
Helix dist	54.2 ± 0.2 * †	1.4 ± 0.2 ** †	60.16 ± 0.5 **\$ †	8.1 ± 0.2 **\$% †	10.6 ± 0.2 **\$% †
Helix total	75.7 ± 0.8 * †	14.5 ± 0.8 ** †	94.21 ± 0.7 **\$ †	19.1 ± 0.7 **\$% †	21.1 ± 0.7 **\$% †
Sheet reg	-59.3 ± 1.4 * †	-15.3 ± 1.0 ** †	-65.1 ± 1.2 **\$	-8.0 ± 0.9 **\$% †	-11.3 ± 0.9 **\$% †
Sheet dist	-36.5 ± 0.3 * †	-9.8 ± 0.2 ** †	-32.9 ± 0.9 **\$ †	-8.0 ± 0.2 **\$% †	-5.6 ± 0.2 **\$% †
Sheet total	-51.0 ± 1.7 * †	-13.3 ± 1.2 ** †	-53.3 ± 1.9 *\$	-8.0 ± 1.0 **\$% †	-9.2 ± 1.0 **\$
Turn	3.2 ± 0.4 * †	-3.1 ± 0.5 ** †	-5.1 ± 1.1 **\$ †	-1.7 ± 0.2 **% †	2.1 ± 0.2 *\$% †
Unordered	9.4 ± 0.9 * †	10.3 ± 0.5 * †	5.9 ± 2.5 **\$	-2.2 ± 0.5 # \$% †	-5.5 ± 0.5 **\$%

*, $P < 0.05$ vs buffer; #, $P < 0.05$ vs CoA; \$, $P < 0.05$ vs LPA; %, $P < 0.05$ vs PA; @, $P < 0.05$ vs OG; †, $P < 0.05$ vs T94T wt.