Supplementary Table 1. DNA sequencing dataset of esophageal cancer from cBioportal

Cancer type	Reference (PMID)	Number of cases	Sequencing method	Abbreviation in cBioportal
Esophageal squamous cell carcinoma	24670651	88	Whole-genome sequencing in 17 ESCC cases and whole-exome sequencing in 71 cases	ICGC, Nature 2014
Esophageal squamous cell carcinoma	24686850	139	Whole exome sequencing or targeted deep sequencing	UCLA, Nat Genet 2014
Esophageal adenocarcinoma	23525077	149	Whole-exome sequencing of 149 EAC tumor-normal pairs, 15 of which have also been subjected to whole-genome sequencing	Broad, Nat Genet 2013
Esophageal carcinoma	NA	186	Whole-genome sequencing	TCGA, Provisional
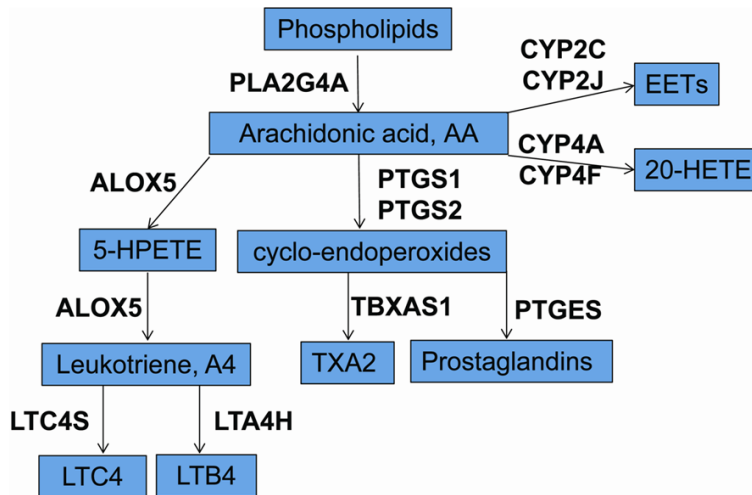
Supplementary Figure 1. The arachidonic acid metabolism pathway.
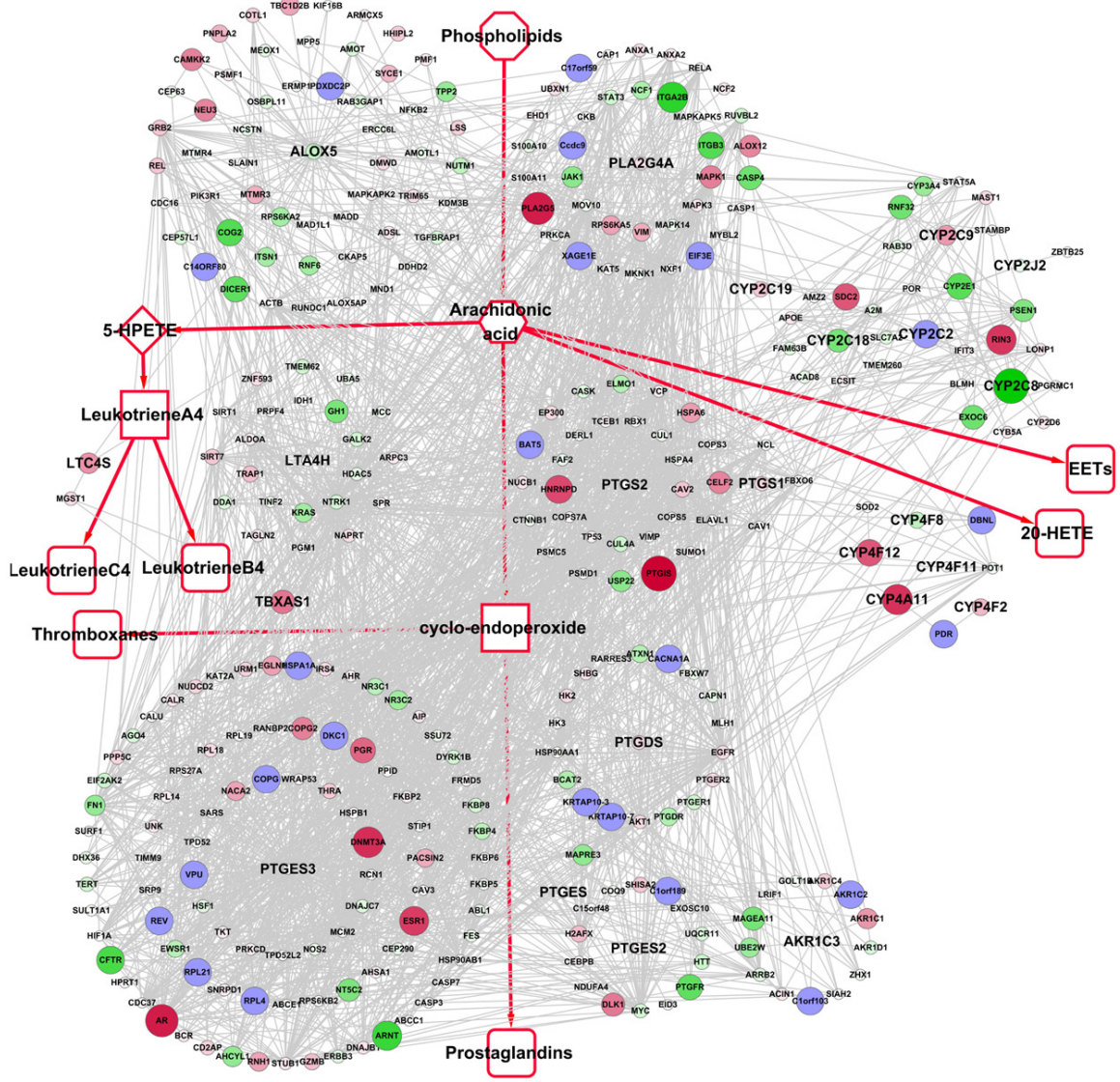
Arachidonic acid metabolism network in esophageal diseases

Supplementary Figure 2. Expression change and correlation in the AA metabolism PPIN in the GSE9768 dataset after treatment with a mixture of primary bile acids.
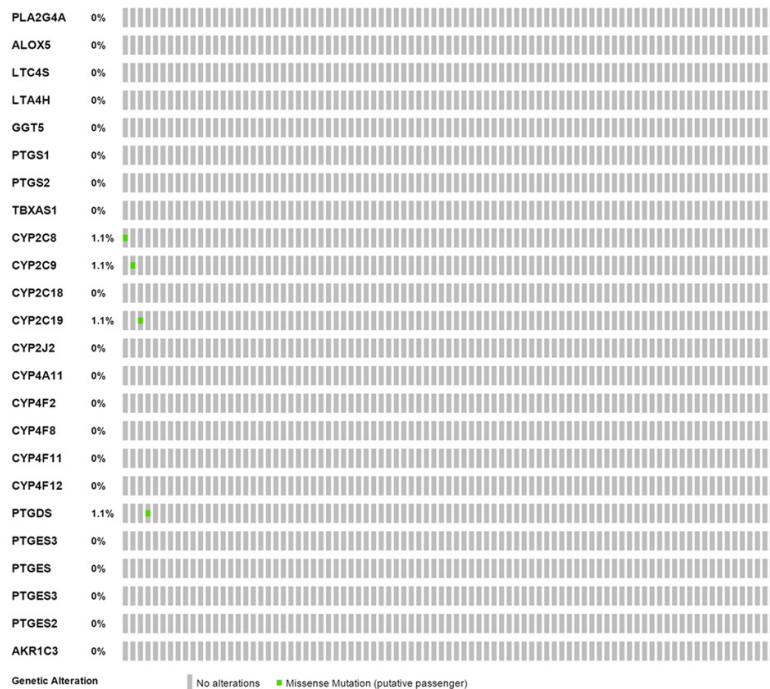
Supplementary Table 2. Significant SNPs in esophageal cancer reported in the literature

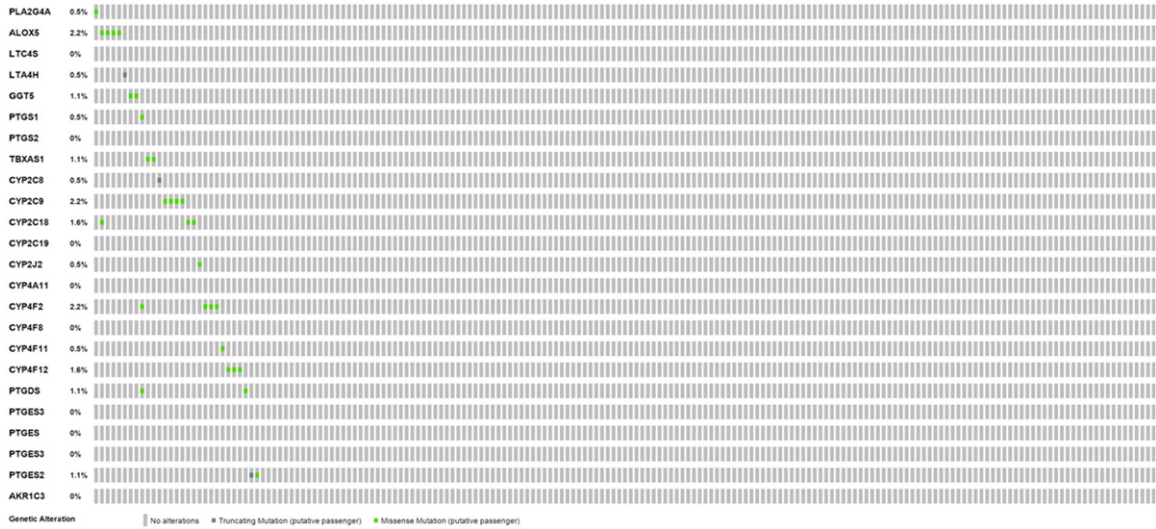| Gene symbol	Significant SNP	Cancer type	PubMed ID
PTGS2	rs12042763	269 cases of ESCC	24641411
PLA2G2A	rs11677		
	rs2236771		
PTGS2	rs3218625	1026 cases of ESCC	19347867
PTGS2	-765 G>C	1200 cases of esophageal cancer	19669667
ALOX12	261 Arg> Gln	1026 cases of ESCC	17460548

Supplementary Figure 3. Mutation rate of key enzymes in arachidonic acid metabolism from the dataset of Broad, Nat Genet 2013. One block presents one clinical case. Gray color means no alterations, brown color means truncating mutation, green color means missense mutation.
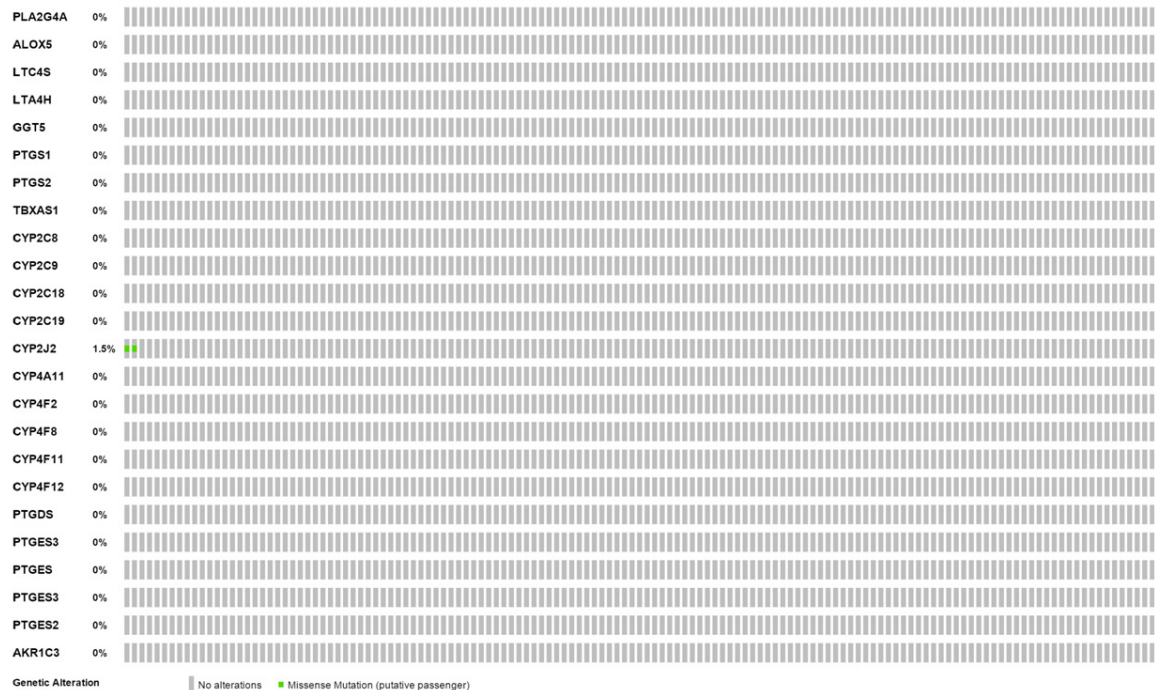

Supplementary Figure 4. Mutation rate of key enzymes in arachidonic acid metabolism from the ICGC dataset, Nature 2014. One block presents one clinical case. Gray color means no alterations, green color means missense mutation.

Supplementary Figure 5. Mutation rate of key enzymes in arachidonic acid metabolism from the TCGA dataset, Provisional. One block presents one clinical case. Gray color means no alterations, brown color means truncating mutation, green color means missense mutation.

Supplementary Figure 6. Mutation rate of key enzymes in arachidonic acid metabolism from the UCLA dataset, Nat Genet 2014. One block presents one clinical case. Gray color means no alterations, green color means missense mutation.