

Extracellular

Bile acid

TGF- α

MMP

EGFR

Cell membrane

Cytoplasm

PIP₂

PLC

PI3-K

GRB2

Sos

Ras

Raf

MEK

MAPK

Erk

IP₃

DAG

PKC

PKB

NF- κ B

Cell cycle
progression

Survival,
Growth

Proliferation

ER

Ca²⁺