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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relation | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| PC | PLD1 | Activation | Activation | Activation | Activation | Activation |
| PLD1 | PA | Activation | Activation | Activation |  | Activation |
| PA | m-TOR | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| m-TOR | S6K1 | Activation | Inhibition | Inhibition |  | Inhibition |
| S6K1 | Protein synthesis through translation | Activation | Activation | Activation | Activation | Activation |
| Protein synthesis through translation | Cell proliferation | Activation |  | Activation | Activation | Activation |
| PA | C-raf | Activation | Activation | Activation | Activation | Activation |
| C-raf | PI3K | Activation | Activation |  |  |  |
| PI3K | AKT | Activation |  |  |  |  |
| AKT | BAD | Activation | Activation | Activation | Activation | Activation |
| BAD | Apoptosis | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |

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|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relation | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| Pectolinarigenin | PTEN | Activation | Activation | Activation | Activation | Activation |
| PTEN | AKT | Activation | Activation | Activation | Activation | Activation |
| PI3K | AKT | Activation |  | Activation |  | Activation |
| AKT | Proliferation | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| AKT | Migration/Invasion | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| AKT | Apoptosis | Activation | Activation |  |  |  |
| p53 | AKT | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relation | GPT-4 | Claude-3 | GEMINI | pathway |
| STAT3 | VEGF | Activation | Activation | Activation | Activation | Activation |
| HIF-1Î± | VEGF | Activation | Activation | Inhibition | Inhibition | Inhibition |
| miRNA | VEGF | Activation | Activation | Activation |  | Activation |
| VEGF | VEGFR2 | Activation | Activation | Activation | Activation | Activation |
| iNOS | NO | Activation |  |  |  |  |
| nNOS | NO | Activation | Activation | Activation | Activation | Activation |
| eNOS | NO | Activation | Activation | Activation | Activation | Activation |

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|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relation | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| Cyclin D1 | Paclitaxel resistance | Activation | Activation | Activation | Activation | Activation |
| CDK6 | Paclitaxel resistance | Activation | Activation | Activation | Activation | Activation |
| miR-34a (â†“) | HuR | Activation | Activation | Activation | Activation | Activation |
| HuR | SIRT1 | Activation |  |  |  |  |
| HuR | Bcl2 | Activation | Inhibition |  |  |  |
| HuR | Paclitaxel resistance | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-200c | ZEB1 | Activation | Activation |  |  |  |
| miR-205 | ZEB1 | Activation | Activation | Activation | Activation | Activation |
| ZEB1 | E-cadherin | Activation |  |  |  |  |
| ZEB2 | E-cadherin | Activation | Activation | Activation |  | Activation |
| Docetaxel selection | miR-200c | Activation | Activation | Activation | Activation | Activation |
| Docetaxel selection | miR-205 | Activation | Activation | Activation | Activation | Activation |
| miR-34a (â†“) | HuR | Inhibition | Inhibition | Inhibition |  | Inhibition |
| ZEB1 | E-cadherin | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relation | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| GF | IRS | Activation | Activation | Activation | Activation | Activation |
| IRS | PI3K | Activation | Activation | Activation | Activation | Activation |
| PI3K | PIP3 | Activation | Inhibition |  |  |  |
| PIP3 | PDK1 | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| PDK1 | AKT/PKB | Activation | Activation | Activation |  | Activation |
| mTORC1 | S6K1 | Activation |  | Activation | Activation | Activation |
| mTORC1 | 4E-BP1 | Activation | Activation | Activation | Activation | Activation |
| mTORC2 | AKT/PKB | Activation | Activation |  |  |  |
| PTEN | PIP3 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| TSC1/TSC2 | mTORC1 | Inhibition |  |  |  |  |
| Rapamycin | mTORC1 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relation | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| HIF1Î± | Twist | Activation | Activation | Activation | Activation | Activation |
| Stat3 | Twist | Activation | Activation | Activation | Activation |  |
| Ras | Twist | Activation | Activation | Activation |  | Activation |
| Mapk | Twist | Activation |  | Activation | Activation |  |
| Akt | Twist | Activation | Activation | Activation | Activation | Activation |
| Wnt | Twist | Activation | Activation | Activation |  | Activation |
| NF-ÎºB | Twist | Activation | Activation |  |  |  |
| N-Myc | Twist | Activation | Activation | Activation | Activation | Activation |
| Twist | N-Cadherin | Activation | Activation | Activation | Activation | Activation |
| Twist | Fibronectin | Activation | Activation | Activation | Activation | Activation |
| Twist | Vimentin | Activation | Activation | Activation |  | Activation |
| Twist | E-Cadherin | Activation |  | Inhibition | Inhibition | Inhibition |
| Twist | Î±/Î³ Catenin | Activation | Activation | Activation | Inhibition | Activation |
| Twist | CD24 | Activation | Activation | Activation | Inhibition | Activation |
| Twist | ARE; p53 | Activation | Activation |  |  |  |
| Twist | TIMPs | Activation | Inhibition |  |  |  |
| Twist | Matrix Metalloproteinases | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| Twist | Cancer Stem Cells | Activation | Activation | Activation | Activation | Activation |
| Twist | EMT | Activation | Activation | Activation | Activation | Activation |
| EMT | Snail, Slug, ZEB1/2, FOXC2 | Activation | Activation | Activation | Activation | Activation |
| Twist | Tumor Metastasis | Activation | Activation | Activation | Activation | Activation |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relation | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| Insulin Receptor | PI3K | Activation | Activation | Activation | Activation | Activation |
| PIP3 | PIP2 | Activation | Activation | Activation | Activation | Activation |
| PIP3 | PTEN | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Insulin/growth factor | Insulin Receptor | Activation |  |  |  |  |
| PI3K | PIP3 | Activation | Activation | Activation | Activation | Activation |
| PTEN | PIP3 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| PIP2 | PIP3 | Activation |  |  |  |  |
| PIP3 | PDK1 | Activation | Activation | Activation | Activation | Activation |
| PIP3 | PDK1 | Activation | Activation |  |  |  |
| PDK1 | Akt | Activation | Activation | Activation | Activation | Activation |
| PDK1 | SGKs | Activation | Activation | Activation |  | Activation |
| PDK1 | TCS1 & 2 | Activation |  |  |  |  |
| TCS1 & 2 | Rheb | Activation | Activation | Activation | Activation | Activation |
| TCS1 & 2 | mTORC1 | Activation | Activation |  |  |  |
| Rheb | mTORC1 | Activation | Activation | Activation | Activation | Activation |
| Rag GTPase | mTORC1 | Activation | Activation | Activation | Activation | Activation |
| AMPK | mTORC1 | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| Essential Amino Acids | Rag GTPase | Activation | Inhibition | Inhibition |  | Inhibition |
| AMPK | Essential Amino Acids | Activation | Activation | Activation | Activation | Activation |
| AMP/ATP Ratio | AMPK | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| AMP/ATP Ratio | mTORC2 | Activation | Activation | Activation | Activation | Activation |
| AMPK | mTORC1 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| PI3K | PIP3 | Activation | Activation | Activation |  | Activation |
| Rheb | AMPK | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |

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| --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relation |  |  |  |
| Prx II | Activation | ROS |  |  |  |
| ROS | Activation | MAP kinase cascade | | |  |
| MAP kinase cascade | Activation | JNK |  |  |  |
| JNK | Activation | Phospho-JNK | |  |  |
| Phospho-JNK | Activation | c-Jun |  |  |  |
| c-Jun | Activation | Cell survival | |  |  |
| c-Jun | Activation | Tumor proliferation | |  |  |
| c-Jun | Inhibition | DNA damage-induced cell death | | | |
|  |  |  |  |  |  |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Relation | Receptor | GPT-4 | Claude-3 | GEMINI | pathway |
| PG | ROS | Inhibits | Inhibition | Inhibition | Inhibition | Inhibition |
| PG | PTEN | Inhibits | Activation | Activation | Activation | Activation |
| PG | TOB-1 | Activation | Activation |  | Activation |  |
| ROS | SOD1 | Activation | Activation | Activation | Activation | Activation |
| TOB-1 | PTEN | Inhibits |  | Inhibition | Inhibition | Inhibition |
| PTEN | AKT | Inhibits | Activation | Activation |  | Activation |
| p53 | Cyclin D | Inhibits | Inhibition | Inhibition | Inhibition |  |
| p53 | Cyclin D | Activation | Activation | Activation | Activation | Activation |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| PLGF | ERK/MAPK | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| ERK/MAPK | MMP3 | Inhibition | Inhibition | Inhibition | Inhibition |  |
| PLGF | VEGFR1 | Activation | Inhibition | Inhibition |  | Inhibition |
| VEGFR1 | TGFÎ²1 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| TGFÎ²1 | Polarization | Activation |  |  |  |  |
| TGFÎ²1 | MMP9 | Activation | Activation | Activation | Activation | Activation |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relationship | GPT-4 | Claude-3 | GEMINI | pathway |
| EGFR | PI3K | Activation | Activation | Activation | Activation | Activation |
| PI3K | AKT | Activation | Activation | Activation | Activation | Activation |
| AKT | mTOR | Activation | Activation | Activation | Activation | Activation |
| mTOR | Cell growth & proliferation | Activation |  |  |  |  |
| EGFR | Grb2 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Grb2 | Sos | Activation | Activation | Activation | Activation | Activation |
| Sos | RAS | Activation | Activation | Activation | Activation | Activation |
| RAS | RAF | Activation | Activation | Activation | Activation | Activation |
| RAF | MEK | Activation |  |  |  |  |
| MEK | ERK | Activation | Activation | Activation | Activation | Activation |
| ERK | Cell growth & proliferation | Activation | Activation | Activation | Activation | Activation |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| Glutaminolysis | Glutamate | Activation | Activation | Activation | Activation | Activation |
| Glutamate | GSH | Activation | Activation | Activation |  | Activation |
| Citrate | Isocitrate | Activation |  | Activation | Activation | Activation |
| Isocitrate | NADPH | Activation | Activation | Activation |  | Activation |
| IDH | PPP | Activation |  | Activation | Activation | Activation |
| NADPH | Redox control | Activation | Activation |  | Activation |  |
| ME1 | OAA | Activation | Activation | Activation | Activation | Activation |
| OAA | Malate | Activation |  | Activation | Activation | Activation |
| Fumarate | Malate | Activation | Activation | Activation | Activation | Activation |
| FH | Succinate | Activation | Activation | Activation |  | Activation |
| SDH | Succinyl-CoA | Activation | Activation | Activation | Activation | Activation |
| Citrate | OAA | Inhibition | Activation | Inhibition | Inhibition | Inhibition |
| Citrate | Acetyl-CoA | Inhibition |  | Inhibition | Inhibition | Inhibition |
| PEP | Pyruvate | Activation | Activation | Activation |  | Activation |
| Pyruvate | Acetyl-CoA | Activation | Activation | Activation | Activation | Activation |
| PKM2 | PEP | Inhibition | Inhibition | Inhibition |  | Inhibition |
| Acetyl-CoA | Î±-Keto | Activation | Activation | Activation | Activation | Activation |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| EpCAM | Ras | Activation | Activation | Activation | Activation | Activation |
| Ras | Raf | Inhibition | Inhibition |  |  | Inhibition |
| Raf | ERK | Activation |  | Activation | Activation |  |
| ERK | Fos, Jun | Activation | Activation | Activation | Activation | Activation |
| Fos, Jun | MMP-9 | Inhibition |  | Inhibition |  | Inhibition |
| MMP-9 | Proliferation, Colony formation, Migration, Adhesion | Activation | Activation | Activation | Activation | Activation |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| Nitroxoline | AMPK | Activation | Activation | Activation | Activation | Activation |
| AMPK | mTOR | Inhibition | Inhibition | Inhibition |  | Inhibition |
| AMPK | Autophagy | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| DNA damage | Chk2 | Activation |  | Activation |  | Activation |
| Chk2 | Apoptosis | Activation | Activation |  | Activation | Activation |
| Chk2 | Cyclin D1 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Cyclin D1 | Rb | Activation | Activation | Activation | Activation | Activation |
| Rb | G1 arrest | Activation | Activation | Activation | Activation | Activation |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| GTP | GEFs | Activation | Activation | Activation | Activation | Activation |
| GDP | GTP | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| NF1 | GTP | Inhibition | Inhibition | Inhibition | Inhibition |  |
| GEFs | PI3K | Activation | Activation | Activation | Activation | Activation |
| PI3K | Akt | Activation | Inhibition | Inhibition |  | Inhibition |
| Akt | mTORC1 | Activation | Inhibition | Inhibition | Inhibition |  |
| mTORC1 | S6K1 | Activation |  | Activation | Inhibition |  |
| S6K1 | Migration | Activation | Activation | Activation | Activation | Activation |
| GTP | GEFs | Activation | Activation |  | Activation | Activation |
| GDP | GTP | Inhibition | Inhibition | Inhibition |  | Inhibition |
| NF1 | GTP | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| GEFs | Raf | Activation |  | Activation |  |  |
| Raf | MEK | Activation | Activation | Inhibition | Activation | Activation |
| MEK | ERK1/2 | Activation | Inhibition |  |  | Inhibition |
| ERK1/2 | RSK | Activation | Inhibition | Inhibition |  | Inhibition |
| RSK | Proliferation, Survival | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| PI3K | AKT | Activation | Activation | Activation | Activation | Activation |
| AKT | BMX | Activation | Activation | Activation | Activation | Activation |
| BMX | STAT3 | Activation | Inhibition | Activation |  | Activation |
| STAT3 | Cell proliferation | Activation |  | Activation | Inhibition |  |
| Cell proliferation | Tumor progression | Activation | Activation |  | Activation | Inhibition |
| Cell cycle | Cell proliferation | Activation | Activation | Activation |  | Activation |
| MK-2206 | AKT | Inhibition | Inhibition | Inhibition | Inhibition |  |
| Rapamycin | mTOR | Inhibition |  | Inhibition |  | Inhibition |
| mTOR | Cell proliferation | Inhibition | Inhibition | Inhibition | Inhibition |  |
| Cryptotanshinone | STAT3 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| Insulin/growth factor | Insulin Receptor | Activation | Activation | Activation | Activation | Activation |
| Insulin Receptor | PI3K | Activation | Activation | Activation | Activation | Activation |
| PI3K | PTEN | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| PI3K | PIPs | Activation |  |  |  |  |
| PIPs | AMP/ATP Ratio | Activation | Activation | Activation | Activation | Activation |
| AMP/ATP Ratio | Essential Amino Acids | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| AMPK | mTORC1 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| AMPK | AMP/ATP Ratio | Activation | Activation | Activation | Activation | Activation |
| AMPK | Essential Amino Acids | Inhibition |  |  |  |  |
| PIP3 | Akt | Activation | Activation | Activation | Activation | Activation |
| Akt | TCS1 & 2 | Inhibition | Activation | Activation | Activation | Activation |
| TCS1 & 2 | Rheb | Inhibition | Activation | Activation | Activation | Activation |
| Rheb | mTORC1 | Activation | Activation | Activation | Activation | Activation |
| mTORC2 | GS3K | Activation | Activation | Activation | Activation | Activation |
| GS3K | Rheb | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| PLGF | ERK/MAPK | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| ERK/MAPK | MMP3 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| PLGF | VEGFR1 | Activation |  |  |  |  |
| VEGFR1 | TGFÎ²1 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| TGFÎ²1 | polarization | Activation | Activation | Activation | Activation | Activation |
| TGFÎ²1 | MMP9 | Activation |  |  |  |  |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| EGFR | PI3K | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| PI3K | AKT | Activation | Activation | Activation | Activation | Activation |
| AKT | mTOR | Activation |  |  |  |  |
| mTOR | Cell growth & proliferation | Activation | Activation | Activation | Activation | Activation |
| EGFR | Grb2 | Activation | Activation | Activation |  | Activation |
| Grb2 | Sos | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| Sos | RAS | Activation | Inhibition | Inhibition |  | Inhibition |
| RAS | RAF | Activation | Activation | Activation | Activation | Activation |
| RAF | MEK | Activation | Activation | Activation |  | Activation |
| MEK | ERK | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| ERK | Cell growth & proliferation | Activation |  |  |  |  |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| TGF-Î²1 | MiR-206 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| NRF2 | MiR-206 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Samd3 | MiR-206 | Inhibition | Inhibition | Inhibition |  | Inhibition |
| TRIB2 | MiR-206 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Bcl2 | MiR-206 | Inhibition |  |  |  |  |
| c-Met | MiR-206 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| G6PD | MiR-206 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| PDG | MiR-206 | Inhibition | Inhibition | Inhibition |  | Inhibition |
| TKT | MiR-206 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| GPD2 | MiR-206 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| GPD2 | TKT | Activation | Activation | Activation | Activation | Activation |
| GPD2 | G6PD | Activation |  |  |  |  |
| TKT | G6PD | Activation | Activation | Activation | Activation | Activation |
| G6PD | NADPH | Activation | Activation | Activation | Activation | Activation |
| NADPH | Ribose synthesis | Activation | Activation | Activation | Activation | Activation |
| c-Met | Proliferation | Activation |  |  |  |  |
| Bcl2 | Proliferation | Activation | Activation | Activation |  | Activation |
| TRIB2 | Proliferation | Activation | Activation | Activation | Activation | Activation |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| EGFR | PLC-Î³ | Activation | Activation | Activation | Activation | Activation |
| EGFR | PI-3K | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| EGFR | Ras | Activation | Activation | Activation | Activation | Activation |
| EGFR | STATs | Activation | Activation | Activation | Activation | Activation |
| PLC-Î³ | Nuclear targets | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| PI-3K | Nuclear targets | Activation | Activation | Activation | Activation | Activation |
| Ras | Nuclear targets | Activation | Activation | Activation | Activation | Activation |
| STATs | Nuclear targets | Activation | Activation | Activation | Activation | Activation |
| EGF/vitamin D | EGFR | Activation | Activation | Activation | Activation | Activation |
| EGF | EGFR | Activation | Activation | Activation | Activation | Activation |
| Radiation, cisplatin, heat, H2O2 | EGFR | Activation | Activation | Activation | Activation | Activation |
| EGFR | E2F1 | Activation | Activation | Activation | Activation | Activation |
| EGFR | STAT3 | Activation | Activation | Activation | Activation | Activation |
| EGFR | DNA-PK | Activation | Activation | Activation | Activation | Activation |
| E2F1 | Cyclin D1 | Activation | Activation | Activation | Activation | Activation |
| E2F1 | B-Myb | Activation | Activation | Activation | Activation | Activation |
| STAT3 | iNOS | Activation | Activation | Activation | Activation | Activation |
| DNA-PK | DNA repair | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| Ligand | TAM receptor | Activation | Activation | Activation | Activation | Activation |
| TAM receptor | PI3K | Activation | Activation | Activation |  | Activation |
| TAM receptor | Grb2 | Activation | Activation |  | Activation | Activation |
| Grb2 | SOS | Activation | Activation | Activation | Activation |  |
| SOS | ERK1/2 | Activation | Activation | Activation |  | Activation |
| PI3K | PIP3 | Activation |  | Activation | Activation | Activation |
| PIP3 | Akt | Activation | Activation | Activation | Activation |  |
| Akt | NFÎºB | Activation | Activation |  |  | Activation |
| ERK1/2 | Cell Proliferation | Activation |  | Activation | Activation | Activation |
| NFÎºB | Cell Survival | Activation | Activation | Activation |  | Activation |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| PPY | PI3K | Activation | Activation | Activation | Activation | Activation |
| PI3K | PTEN | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| PI3K | PDK | Activation | Activation | Activation | Activation |  |
| PDK | mTOR | Activation | Activation | Activation |  | Activation |
| Autophagy Induction | mTOR | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| mTOR | Migration/Survival | Activation | Activation |  | Activation | Activation |
| mTOR | Invasion/Metastasis | Activation | Activation | Activation | Activation |  |
| mTOR | Bad/Bax/p53 | Inhibition | Inhibition |  | Inhibition | Inhibition |
| mTOR | Bcl-2/Bid/NF-ÎºB | Inhibition | Inhibition | Inhibition |  | Inhibition |
| Bad/Bax/p53 | Apoptosis | Activation | Activation |  | Activation | Activation |
| Bcl-2/Bid/NF-ÎºB | Apoptosis | Activation | Activation | Activation |  | Activation |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| X-RAY | Cytochine Receptor/Growth Factor Receptor | Activation | Activation | Activation | Activation | Activation |
| Cytochine Receptor/Growth Factor Receptor | Sphk1 | Activation | Activation | Activation | Activation | Activation |
| Sphk1 | Sphingosine | Activation | Activation | Activation | Inhibition | Activation |
| Sphingosine | S1P | Activation | Activation |  | Inhibition | Activation |
| S1P | FTY720 | Inhibition | Inhibition | Inhibition | Inhibition |  |
| FTY720 | S1P | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| S1P | RAS | Activation | Activation | Activation |  | Activation |
| RAS | ERK | Activation |  | Activation | Activation | Activation |
| ERK | Proliferation | Activation | Activation | Inhibition | Activation | Activation |
| S1P | PI3K | Activation |  | Inhibition | Activation | Inhibition |
| PI3K | AKT | Activation | Activation | Activation | Activation | Inhibition |
| AKT | mTOR | Activation | Activation | Activation |  | Activation |
| mTOR | Autophagy/Apoptosis | Activation | Activation | Activation | Activation | Activation |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| miR-590-3p | MST | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| SAV | MST | Activation | Activation | Activation | Activation | Activation |
| MST | LATS | Activation | Activation | Activation |  | Activation |
| MOB | LATS | Activation | Activation |  | Activation |  |
| LATS | YAP | Inhibition |  | Inhibition | Inhibition | Inhibition |
| YAP | 14-3-3 | Activation | Activation | Activation |  | Activation |
| 14-3-3 | YAP degradation | Activation | Activation | Activation | Activation | Activation |
| YAP | TEAD | Activation | Activation | Activation | Activation |  |
| TEAD | Cell proliferation, Invasion, and metastasis | Activation | Activation | Activation | Activation | Activation |

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|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| ANG II | AGTR1 | Activation | Activation | Activation | Activation | Activation |
| AGTR1 | PKC? | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| PKC? | CARMA3 | Activation | Activation | Activation | Activation | Activation |
| CARMA3 | BCL-10 | Activation | Activation | Activation | Activation | Activation |
| BCL-10 | MALT1 | Activation | Activation | Activation | Activation | Activation |
| ROS | c-SRC | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| c-SRC | GRB2 | Activation | Activation | Activation | Activation | Activation |
| GRB2 | SHC | Activation | Activation | Activation | Activation | Activation |
| SHC | ERK | Activation | Activation | Activation | Activation | Activation |
| ERK | EMT | Activation | Activation | Activation | Activation | Activation |
| ERK | Proliferation, Migration, Survival | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| IKKÎ³ | IÎºBÎ± | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| IÎºBÎ± | NF-ÎºB | Activation | Activation | Activation | Activation | Activation |
| NF-ÎºB | Proliferation, Migration, Survival | Activation | Activation | Activation | Activation | Activation |

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| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| IL-4 | IL-4RÎ± | Activation | Activation | Activation | Activation | Activation |
| IL-13 | IL-13RÎ±1 | Activation | Activation | Activation | Activation | Activation |
| IL-4RÎ± | JAK1 | Activation | Activation | Activation |  | Activation |
| IL-13RÎ±1 | JAK1 | Activation | Activation |  | Activation | Activation |
| JAK1 | STAT6 | Activation | Activation | Activation | Activation |  |
| STAT6 | NOX1L/S mRNA | Activation |  | Activation |  | Activation |
| NOX1L/S mRNA | Transcription | Activation | Activation | Activation | Activation | Activation |
| GATA3 | NOX1 promoter | Inhibition | Inhibition | Inhibition |  | Inhibition |
| NOX1L/S | ROS | Activation |  | Activation |  | Activation |
| ROS | Protein tyrosine phosphatase | Inhibition | Inhibition | Inhibition | Inhibition |  |
| Protein tyrosine phosphatase | Cyclin D3 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Cyclin D3 | Cell cycle regulation | Activation | Activation | Activation | Activation |  |

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| Starter | Receptor | Relationship | GPT-4 | Claude-3 | GEMINI | pathway |
| GPCR | Rho | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| RTK | MEK1/2 | Activation | Activation | Activation | Activation | Activation |
| Rho | ROCK1/2 | Inhibition | Inhibition |  | Inhibition |  |
| NF2 | LATS1/2 | Inhibition | Inhibition | Inhibition |  | Inhibition |
| MEK1/2 | ERK1/2 | Activation |  | Activation | Activation | Activation |
| ROCK1/2 | YAP | Inhibition | Inhibition | Inhibition |  | Inhibition |
| ROCK1/2 | LATS1/2 | Inhibition | Inhibition | Inhibition | Inhibition |  |
| LATS1/2 | YAP | Inhibition | Inhibition |  | Inhibition | Inhibition |
| LATS1/2 | TEAD | Activation | Activation | Activation |  | Activation |
| ERK1/2 | YAP | Activation |  | Activation | Activation |  |
| YAP | TEAD | Activation | Activation | Activation |  | Activation |
| TEAD | CTGF/Cyr61 | Activation | Activation | Activation | Activation | Activation |

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| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| Aurora A | Plk1 | Activation | Activation | Activation | Activation | Activation |
| MEK | ERK (Gastric CSC-like cell) | Activation | Activation | Activation | Activation | Activation |
| ERK | RSK1 (Gastric CSC-like cell) | Inhibition | I | Inhibition | Inhibition | Inhibition |
| RSK1 | Sphere formation of CSC-like cell | Activation | Activation |  | Activation | Activation |
| Plk1 | Sphere formation of CSC-like cell | Activation | Activation | Activation |  | Activation |
| MEK | ERK (Gastric cancer cell) | Activation | Activation | Activation | Activation | Activation |
| ERK | RSK1 (Gastric cancer cell) | Activation | Activation |  | Activation |  |
| Plk1 | Cancer cell proliferation | Activation | Activation | Activation | Activation | Activation |

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| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| TGF-Î² | TÎ²R | Activation | Activation | Activation | Activation | Activation |
| TÎ²R | SMAD2/3 | Activation |  | Activation |  | Activation |
| SARA | SMAD2/3 | Activation | Inhibition |  | Activation | Inhibition |
| SMAD2/3 | SMAD4 | Activation | Inhibition | Activation |  | Inhibition |
| SMAD2/3 | SMAD4 | Activation | Activation | Inhibition | Inhibition |  |
| SMAD2/3 | SMAD4 | Activation | Activation | Inhibition | Inhibition | Activation |
| SMAD4 | Proliferation/CSCs expansion/EMT/Apoptosis | Activation |  | Activation |  |  |
| SIX1/EYA | DACH1 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |

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| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| Nitroxoline | AMPK | Activation | Activation | Activation | Activation | Activation |
| AMPK | DNA damage | Activation | Activation | Inhibition |  | Inhibition |
| DNA damage | Autophagy | Activation |  | Inhibition | Activation | Inhibition |
| mTOR | p70S6K | Inhibition | Inhibition | Inhibition | Inhibition |  |
| p70S6K | Cyclin D1 | Activation | Activation | Activation | Inhibition | Activation |
| Cyclin D1 | Rb | Activation | Activation |  | Inhibition |  |
| Chk2 | Apoptosis | Activation | Activation | Activation |  | Activation |
| Rb | G1 arrest | Inhibition |  | Inhibition | Inhibition | Inhibition |
| Apoptosis | G1 arrest | Activation | Activation | Activation |  | Activation |

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| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| PI3K | AKT | Activation | Activation | Activation | Activation | Activation |
| AKT | BMX | Activation | Activation | Activation | Activation |  |
| AKT | mTOR | Activation | Activation | Activation |  | Activation |
| BMX | STAT3 | Activation | Activation |  | Activation | Activation |
| STAT3 | Cell proliferation | Activation | Activation | Activation | Activation | Activation |
| MK-2206 | AKT | Inhibition | Inhibition | Inhibition |  | Inhibition |
| Rapamycin | mTOR | Inhibition |  | Inhibition | Inhibition |  |
| Cryptotanshinone | STAT3 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Cell cycle | Cell proliferation | Activation |  | Activation | Activation |  |
| Cell proliferation | Tumor progression | Activation | Activation | Activation | Activation | Activation |

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| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| CNF1 | Rho | Activation | Activation | Activation | Activation | Activation |
| Rho | Cytoskeleton | Activation | Activation | Activation | Activation | Activation |
| Rho | Mitochondria | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Akt | IKK | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| IKK | NF-ÎºB | Activation | Activation | Activation | Activation | Activation |
| NF-ÎºB | Pro-inflammatory factors | Activation | Activation | Activation | Activation | Activation |
| Mitochondria | Cancer? | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Cytoskeleton | Asymmetric cell division and aneuploidy | Activation | Activation | Activation | Activation | Activation |
| Inflammation and cancer? | Anti-apoptotic factors | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |

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| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| PI3K | AKT | Activation | Activation | Activation | Activation | Activation |
| AKT | mTOR | Activation | Activation |  |  |  |
| mLST8 | mTOR | Activation | Activation | Activation | Activation | Activation |
| mTOR | Proliferation | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| mTOR | Transcription | Inhibition |  | Activation | Activation | Activation |
| mTOR | Angiogenesis | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| mTOR | Autophagy | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| mTOR | Protein synthesis | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Everolimus | mTOR | Inhibition |  |  |  |  |
| Temsirolimus | mTOR | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Sirolimus | mTOR | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |

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| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| DKK4 | Wnt | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Wnt | FZD | Activation | Activation | Activation | Activation |  |
| LRP6 | B-Catenin | Activation | Activation | Activation |  | Activation |
| GSK3/APC/Axin | Ubiquitination | Inhibition | Inhibition |  | Inhibition | Inhibition |
| B-Catenin | LEF-1 | Activation |  | Activation | Activation |  |
| DVL | NKD1 | Activation | Activation | Activation | Activation | Activation |
| NKD1 | B-Catenin | Inhibition |  | Inhibition |  | Inhibition |
| B-Catenin | TCF | Activation | Activation | Activation | Activation | Activation |
| B-Catenin | LEF-1 | Activation | Activation | Activation | Activation | Activation |
| LEF-1 | PITX2 | Activation |  | Activation |  | Activation |
| PITX2 | LEF-1 | Activation | Activation | Activation | Activation | Activation |

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| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| Wogonin | Bcl-2 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Wogonin | Bax | Activation | Activation | Activation | Activation | Activation |
| Wogonin | Caspase-3/9 | Activation | Activation | Activation | Activation | Activation |
| Bcl-2 | Cyto.C | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Bcl-2 | Caspase-3/9 | Activation | Activation | Activation | Activation | Activation |
| Bax | Caspase-3/9 | Activation | Activation | Activation | Activation | Activation |
| Cyto.C | Apoptosis | Activation | Activation | Activation | Activation | Activation |

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| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| RACK1 | STAT1 | Activation | Activation | Activation | Activation | Activation |
| RACK1 | p53 | Activation | Activation |  | Activation |  |
| RACK1 | NF-kB | Activation | Activation | Activation |  | Activation |
| p53 | p38 | Activation |  | Activation | Activation | Activation |
| p53 | p21 | Activation | Activation | Activation | Activation | Activation |
| p21 | Cyclin D1 | Activation | Activation | Activation |  | Activation |
| STAT1 | Cyclin D1 | Activation | Activation |  | Activation |  |
| STAT1 | NF-kB | Activation |  | Activation | Activation | Activation |
| NF-kB | Cyclin D1 | Activation | Activation | Activation | Activation |  |
| Cyclin D1 | CDk4 | Activation | Activation | Activation | Activation | Activation |

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| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| Pectolinarigenin | PTEN | Activation | Activation | Activation | Activation | Activation |
| PTEN | AKT | Inhibition | Inhibition | Inhibition |  | Inhibition |
| PI3K | AKT | Activation |  | Activation | Activation |  |
| AKT | Migration/Invasion | Activation | Activation |  | Activation | Activation |
| AKT | Proliferation | Activation | Activation | Activation |  | Activation |
| AKT | Apoptosis | Inhibition | Inhibition | Inhibition | Inhibition |  |
| p53 | AKT | Inhibition | Inhibition | Inhibition |  | Inhibition |

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| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| BMP2 | PDK1 | Activation | Activation | Activation | Activation | Activation |
| PDK1 | AKT | Activation | Activation | Activation | Activation | Activation |
| PDK1 | GSK3Î² | Activation | Activation |  | Activation | Activation |
| BMP2 | MST1/2 | Activation | Activation | Activation |  | Activation |
| RASSF1 | MST1/2 | Activation | Activation | Activation | Activation |  |
| MST1/2 | LATS1/2 | Activation |  | Activation |  | Activation |
| LATS1/2 | YAP | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| YAP | TEAD | Activation | Activation | Activation |  | Activation |
| BMP2 | Smad1/5/8 | Activation |  | Activation | Activation |  |
| Smad1/5/8 | p53 | Activation | Activation | Activation | Activation | Activation |
| p53 | p21 | Activation | Activation |  | Activation | Activation |
| AKT | GSK3Î² | Inhibition | Inhibition | Inhibition |  | Inhibition |
| GSK3Î² | Cyclin D1 | Inhibition | Inhibition | Inhibition | Inhibition |  |

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| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| EGCG | MAP3K | inhibition | inhibition | inhibition | inhibition | inhibition |
| EGCG | MMP-2 | inhibition | inhibition | inhibition | inhibition | inhibition |
| EGCG | MMP-3 | inhibition | inhibition | inhibition | inhibition | inhibition |
| EGCG | MMP-9 | inhibition | inhibition | inhibition | inhibition | inhibition |
| EGCG | BCL-2 | inhibition | inhibition | inhibition | inhibition | inhibition |
| EGCG | BAX | activation | activation | activation | activation | activation |
| EGCG | BAK | activation | activation | activation | activation | activation |
| EGCG | DNMT | activation | activation | activation | activation | activation |
| EGCG | NF-ÎºB | activation | activation | activation | activation | activation |
| EGCG | HIF-1Î± | activation | activation | activation | activation | activation |

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| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| MET | STAT3 | inhibition | inhibition | inhibition | inhibition | inhibition |
| HGF | MET | activation | activation | activation | activation | activation |
| EGF | EGFR | activation | activation | activation | activation | activation |
| EGFR | RAS | activation | activation | activation | activation | activation |
| RAS | RAF | activation | activation | activation | activation | activation |
| RAF | MEK | activation | activation | activation | activation | activation |
| MEK | ERK | activation | activation | activation | activation | activation |
| EGFR | PI3K | activation | activation | activation | activation | activation |
| PI3K | AKT | activation | activation | activation | activation | activation |
| AKT | mTOR | activation | activation | activation | activation | activation |
| mTOR | DNA | activation | activation | activation | activation | activation |

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| Gene1 (Starter) | Relationship | Gene2 (Receptor) | |  |
| CD36 | Activation (direct) | AMPK |  |  |
| AMPK | Activation (direct) | Catabolic Pathways | |  |
| AMPK | Inhibition (direct) | Anabolic Pathways | |  |
| AMPK | Inhibition (indirect) | Tumor Growth and Invasion | | |
| Glucose | Activation (direct) | Cellular Respiration | |  |
| Glucose | Activation (direct) | Warburg Effect | |  |
| NADP+ | Activation (direct) | NADPH |  |  |
| AMPK | Inhibition (indirect) | Tumor Growth and Invasion | | |
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| Starter | Receptor | Relationship | |  |  |  |  |
| RTKs | activates | PI3K |  |  |  |  |  |
| PI3K | activates | PIP3 |  |  |  |  |  |
| PIP3 | inhibits | PTEN |  |  |  |  |  |
| mTOR | activates | PIP3 |  |  |  |  |  |
| mTOR | activates | AKT |  |  |  |  |  |
| HIF-1 | activates | Angiogenesis | |  |  |  |  |
| mTORC1 | activates | Protein synthesis, Proliferation, Anti-apoptosis, Metabolism | | | | | |
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| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| InsP6 | AKT | inhibits | inhibits | inhibits | inhibits | inhibits |
| AKT | CASP9 | activates | activates | activates | activates | activates |
| CASP9 | CASP3 | activates | activates | activates | activates | activates |
| AKT | mTOR | inhibits | inhibits | inhibits | inhibits | inhibits |
| mTOR | p70S6K | inhibits | inhibits | inhibits | inhibits | inhibits |
| AKT | p27 | activates | activates | activates | activates | activates |
| AKT | p21 | activates | activates | activates | activates | activates |

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| Starter | Receptor | Relationship | GPT-4 | Claude-3 | GEMINI | pathway |
| PI3K | R-Smads | Activation | Activation | Activation | Activation | Activation |
| RhoA | R-Smads | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| JNK/p38 | R-Smads | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Erk | R-Smads | Activation | Activation | Activation | Activation | Activation |
| I-Smads | R-Smads | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Smad2/3 | Smad4 | Activation | Activation | Activation | Activation | Activation |
| TGFBR2 | Smad2/3 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| TGFBR1 | Smad2/3 | Activation | Activation | Activation | Activation | Activation |
| Smad4 | SBE | Activation | Activation | Activation | Activation | Activation |
| R-Smads | DNA | Activation | Activation | Activation | Activation | Activation |
| Smad2/3 | SBE | Activation | Activation | Activation | Activation | Activation |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| RACK1 | STAT1 | activates | activates | activates | activates | activates |
| RACK1 | NF-kB | activates | activates | activates | activates | activates |
| RACK1 | Cyclin D1 | activates | activates | activates | activates | activates |
| p53 | p21 | inhibits | inhibits | inhibits | inhibits | inhibits |
| p53 | STAT1 | activates | activates | activates | activates | activates |
| p38 | p53 | activates | activates | activates | activates | activates |
| p38 | p21 | activates | activates | activates | activates | activates |
| STAT1 | Cyclin D1 | activates | activates | activates | activates | activates |
| STAT1 | CDk4 | activates | activates | activates | activates | activates |
| NF-kB | Cyclin D1 | activates | activates | activates | activates | activates |
| NF-kB | CDk4 | activates | activates | activates | activates | activates |

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