1

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| Starter | Receptor | Relation | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| HOXC6 | DKK3 | Activation | Activation | Activation | Activation | Activation |
| HOXC6 | WIF1 | Activation | Activation | Activation | Activation | Activation |
| HOXC6 | SFRP1 | Activation | Activation | Activation | Activation | Activation |
| HOXC6 | SFRP2 | Activation | Activation | Activation |  | Activation |
| DKK3 | Wnt | Inhibition | Activation | Activation | Activation | Activation |
| WIF1 | Wnt | Inhibition | Inhibition |  |  |  |
| SFRP1 | Wnt | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| SFRP2 | Wnt | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Wnt | PSEN1 | Activation | Activation | Activation |  | Activation |
| Wnt | SOX4 | Activation |  |  | Activation |  |
| Wnt | DLL1 | Activation | Activation | Activation | Activation | Activation |
| BMP7 | NOTCH1 | Activation |  | Inhibition | Inhibition | Inhibition |
| PSEN1 | NOTCH1 | Activation | Activation | Activation | Activation | Activation |
| DLL1 | NOTCH1 | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| SOX4 | TNC | Activation | Activation | Activation | Activation | Activation |
| TNC | METASTASIS | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| ADAM10 | NOTCH1 | Activation | Activation | Activation | Activation | Activation |

2

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relation | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| TNFÎ± | TNFR | Activation | Activation | Activation | Activation | Activation |
| TNFR | NF-ÎºB | Activation | Activation | Activation | Activation | Activation |
| TNFR | Akt | Activation | Inhibition | Activation |  |  |
| NF-ÎºB | CSN2 | Activation | Activation | Activation | Activation | Activation |
| CSN2 | Snail | Activation | Activation | Activation | Activation | Activation |
| UPS | Î²-Trcp | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| Î²-Trcp | Snail | Degradation |  |  |  |  |
| Akt | GSK-3Î² | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| GSK-3Î² | Î²-catenin | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| GSK-3Î² | Snail | Inhibition | Inhibition | Inhibition |  |  |
| Snail | E-cad | Inhibition | Inhibition |  | Inhibition | Inhibition |
| Snail | EMT | Activation | Activation | Activation | Activation | Activation |
| Î²-catenin | Proliferation | Activation |  | Inhibition | Inhibition | Inhibition |
| Snail | Î²-catenin | Activation | Activation | Activation | Activation | Activation |

3

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| Starter | Receptor | Relation | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| TOB1 | EGF receptor | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| EGF receptor | PI3K | Activation | Activation | Activation |  | Activation |
| PI3K | Akt | Activation | Activation | Activation | Activation | Activation |
| PI3K | PTEN | Inhibition |  |  |  |  |
| PTEN | PI3K | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| TOB1 | PI3K | Inhibition | Inhibition | Inhibition |  | Inhibition |
| PI3K | ERK/p38MAPK | Activation | Activation | Activation | Activation | Activation |
| Akt | Î²-catenin | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Akt | NF-ÎºB (p50/p65) | Activation | Activation |  |  |  |
| ERK/p38MAPK | IÎºBÎ± | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| IÎºBÎ± | NF-ÎºB (p50/p65) | Inhibition | Activation | Activation | Activation | Activation |
| Î²-catenin | E-cadherin | Activation | Activation | Activation | Activation | Activation |
| E-cadherin | MMPs | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Î³-catenin | Î²-catenin | Activation | Activation | Activation | Activation | Activation |
| Î±-catenin | Î²-catenin | Activation | Activation | Activation |  | Activation |
| Î²-catenin | MMPs | Activation | Activation | Activation | Activation | Activation |
| Î²-catenin | Cyclin D1 | Activation | Activation | Activation |  | Activation |
| NF-ÎºB (p50/p65) | Cyclin D1 | Activation | Activation | Activation | Activation | Activation |
| MMPs | Metastasis | Activation |  | Activation | Activation | Inhibition |
| Cyclin D1 | Tumor growth | Activation | Activation | Activation | Activation | Activation |

4

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relation | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| X-RAY | Cytokine Receptor/Growth Factor Receptor | Activation | Activation | Activation | Activation | Activation |
| Cytokine Receptor/Growth Factor Receptor | Sphk1 | Activation |  | Activation |  | Activation |
| Sphk1 | S1P | Activation | Activation |  | Activation |  |
| S1P | S1P Receptor | Activation | Activation | Activation | Activation | Activation |
| FTY720 | S1P | Inhibition | Inhibition | Activation | Activation | Activation |
| S1P Receptor | G1 | Activation |  | Activation |  | Activation |
| S1P Receptor | RAS | Activation | Activation |  | Activation |  |
| S1P Receptor | PI3K | Activation | Activation | Activation | Activation | Activation |
| S1P Receptor | AKT | Activation | Activation | Activation | Activation | Activation |
| G1 | RAS | Activation | Activation | Activation | Inhibition | Activation |
| RAS | ERK | Activation | Activation | Inhibition | Activation | Inhibition |
| ERK | Proliferation | Activation | Inhibition | Activation |  | Activation |
| PI3K | AKT | Activation | Inhibition |  | Inhibition |  |
| AKT | mTOR | Activation | Activation | Inhibition | Activation | Inhibition |
| mTOR | Autophagy/Apoptosis | Activation | Activation | Activation |  | Activation |

5

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relation | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| let-7 | RAS | Activation | Activation | Activation | Activation | Activation |
| RAS | RAS | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| RAF-1 | RAF-1 | Activation | Activation | Activation | Activation | Activation |
| RAF-1 | MEK1 | Activation | Activation | Activation | Activation | Activation |
| MEK1 | MEK2 | Activation |  |  |  |  |
| MEK2 | ERK1 | Activation | Activation | Activation | Activation | Activation |
| ERK1 | ERK2 | Activation |  |  |  |  |
| ERK2 | p90RSK | Activation | Activation | Activation | Activation | Activation |
| EGFR Family Receptors | p90RSK | Activation | Activation | Activation | Activation | Activation |
| PI3K | PI3K | Activation | Activation | Activation |  | Activation |
| PDK1 | PDK1 | Activation | Activation | Activation | Activation | Activation |
| AKT | AKT | Activation | Activation |  |  |  |
| AKT | Pro-apoptotic Factors (FOXO, BIM, BAX) | Inhibition |  | Activation |  | Activation |
| PTEN | Anti-apoptotic Factors (Bcl-2, MCL1) | Activation | Activation | Activation | Activation | Activation |
| miR-145 | PI3K | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-214 | N-RAS | Inhibition | Inhibition | Inhibition |  | Inhibition |
| miR-143 | N-RAS | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-181a | K-RAS | Inhibition |  |  |  | Inhibition |
| miR-217 | K-RAS | Inhibition | Inhibition | Inhibition |  |  |
| miR-195 | K-RAS | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-497 | RAF-1 | Inhibition |  | Inhibition | Inhibition | Inhibition |
| miR-34a | MEK1 | Inhibition | Inhibition | Inhibition |  |  |
| miR-497 | MEK1 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-1826 | MEK1 | Inhibition | Inhibition | Inhibition |  | Inhibition |
| miR-124 | ERK1 | Inhibition | Inhibition |  | Inhibition | Inhibition |
| miR-214 | ERK1 | Inhibition | Inhibition | Inhibition | I | Inhibition |
| miR-483-5p | ERK1 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-17-5p | RAS | Inhibition | Inhibition | Inhibition |  |  |
| miR-21 | RAS | Inhibition | Activation | Activation | Activation | Activation |
| miR-22 | RAS | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-205 | RAS | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-221/222 | RAS | Inhibition | Activation | Activation | Activation | Activation |
| miR-7 | PI3K | Inhibition | Inhibition | Activation | Activation | Activation |
| miR-375 | PDK1 | Inhibition | Inhibition | Activation | Activation | Activation |
| miR-302-367 cluster | AKT | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-155 | Pro-apoptotic Factors | Activation |  | Activation |  | Activation |
| miR-182 | Pro-apoptotic Factors | Activation | Activation | Activation | Activation | Activation |

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| Starter | Receptor | Relation | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| H2AX | ATM | Activation | Activation | Activation | Activation | Activation |
| ATR | ATM | Activation | Activation | Activation |  | Activation |
| ATM | MDM2 | Activation | Activation | Activation | Activation | Activation |
| ATM | p53 | Activation | Inhibition |  |  |  |
| ATM | CHK2 | Activation | Activation | Activation | Activation | Activation |
| ATM | CHK1 | Activation | Activation |  |  |  |
| CHK2 | p53 | Activation | Activation | Activation | Activation | Activation |
| CHK1 | CDC25A | Inhibition | Activation | Activation | Activation | Activation |
| CDC25A | CDK2 | Activation | Activation | Activation | Activation | Activation |
| p53 | p21 | Activation | Activation | Activation |  |  |
| p21 | CyclinD | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| p21 | CDK4/6 | Inhibition | Activation | Activation |  | Activation |
| CyclinD | CDK4/6 | Activation | Activation | Activation | Activation | Activation |
| CDK4/6 | G1/S progression | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| CDK2 | CyclinE | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| CyclinE | G1/S progression | Activation | Activation | Activation | Activation | Activation |
| miR-24 | H2AX | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-138 | H2AX | Inhibition | Activation | Activation | Activation | Activation |
| miR-17-3p | MDM2 | Inhibition | Activation | Activation |  |  |
| miR-18b | MDM2 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-106b cluster | p21 | Inhibition | Inhibition | Inhibition |  | Inhibition |
| miR-15/16 family | CyclinD | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-15/16 family | CDK4/6 | Inhibition |  | Inhibition | Inhibition | Inhibition |
| miR-34a | CyclinD | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-34a | CDK4/6 | Inhibition | Inhibition | Inhibition |  |  |
| miR-129 | CDK4/6 | Inhibition | Inhibition | Inhibition |  | Inhibition |
| let-7 family | CyclinD | Inhibition | Inhibition | Inhibition |  |  |
| let-7 family | CDK4/6 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-449a/b | CyclinD | Inhibition |  |  |  |  |
| miR-449a/b | CDK4/6 | Inhibition | Activation | Activation | Activation | Activation |
| miR-483-3p | CyclinD | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-483-3p | CDK4/6 | Inhibition |  |  |  |  |
| miR-16 | CDC25A | Inhibition | Activation | Activation | Activation | Activation |
| let-7 family | CDC25A | Inhibition | Activation |  |  |  |
| miR-21 | CDC25A | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-449a/b | CDC25A | Inhibition | Inhibition | Inhibition |  | Inhibition |
| miR-483-3p | CDC25A | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-124a | CDK2 | Inhibition |  | Activation |  | Activation |
| miR-885-5p | CDK2 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-29c | CyclinE | Inhibition | Inhibition | Inhibition |  | Inhibition |
| miR-15/16 family | CyclinE | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relation | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| H2AX | ATM | Activation | Activation | Activation | Activation | Activation |
| ATR | ATM | Activation | Activation | Activation |  | Activation |
| ATM | MDM2 | Activation | Activation | Activation | Activation | Activation |
| ATM | p53 | Activation | Inhibition |  |  |  |
| ATM | CHK2 | Activation | Activation | Activation | Activation | Activation |
| ATM | CHK1 | Activation | Activation |  |  |  |
| CHK2 | p53 | Activation | Activation | Activation | Activation | Activation |
| CHK1 | CDC25A | Inhibition | Activation | Activation | Activation | Activation |
| CDC25A | CDK2 | Activation | Activation | Activation | Activation | Activation |
| p53 | p21 | Activation | Activation | Activation |  |  |
| p21 | CyclinD | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| p21 | CDK4/6 | Inhibition | Activation | Activation |  | Activation |
| CyclinD | CDK4/6 | Activation | Activation | Activation | Activation | Activation |
| CDK4/6 | G1/S progression | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| CDK2 | CyclinE | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| CyclinE | G1/S progression | Activation | Activation | Activation | Activation | Activation |
| miR-24 | H2AX | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-138 | H2AX | Inhibition | Activation | Activation | Activation | Activation |
| miR-17-3p | MDM2 | Inhibition | Activation | Activation |  |  |
| miR-18b | MDM2 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-106b cluster | p21 | Inhibition | Inhibition | Inhibition |  | Inhibition |
| miR-15/16 family | CyclinD | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-15/16 family | CDK4/6 | Inhibition |  | Inhibition | Inhibition | Inhibition |
| miR-34a | CyclinD | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-34a | CDK4/6 | Inhibition | Inhibition | Inhibition |  |  |
| miR-129 | CDK4/6 | Inhibition | Inhibition | Inhibition |  | Inhibition |
| let-7 family | CyclinD | Inhibition | Inhibition | Inhibition |  |  |
| let-7 family | CDK4/6 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-449a/b | CyclinD | Inhibition |  |  |  |  |
| miR-449a/b | CDK4/6 | Inhibition | Activation | Activation | Activation | Activation |
| miR-483-3p | CyclinD | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-483-3p | CDK4/6 | Inhibition |  |  |  |  |
| miR-16 | CDC25A | Inhibition | Activation | Activation | Activation | Activation |
| let-7 family | CDC25A | Inhibition | Activation |  |  |  |
| miR-21 | CDC25A | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-449a/b | CDC25A | Inhibition | Inhibition | Inhibition |  | Inhibition |
| miR-483-3p | CDC25A | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-124a | CDK2 | Inhibition |  | Activation |  | Activation |
| miR-885-5p | CDK2 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-29c | CyclinE | Inhibition | Inhibition | Inhibition |  | Inhibition |
| miR-15/16 family | CyclinE | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |

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| Starter | Receptor | Relation | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| FAS-L | FAS-R | Activation | Activation | Activation | Activation | Activation |
| FAS-R | FADD | Activation | Activation | Activation | Activation | Activation |
| FADD | CASP8 | Activation | Activation | Activation | Activation | Activation |
| CASP8 | CASP3 | Activation | Activation |  |  |  |
| CASP8 | CASP7 | Activation |  | Activation | Activation | Activation |
| CASP3 | Apoptosis | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| CASP7 | Apoptosis | Activation | Activation | Activation |  |  |
| Excess Damage | p53 | Activation | Activation | Activation | Activation | Activation |
| p53 | PUMA | Activation | Inhibition |  |  |  |
| p53 | FAS-R | Activation | Activation | Activation | Activation | Activation |
| p53 | NOXA | Activation | Activation | Activation |  | Activation |
| p53 | BAX | Activation | Activation |  |  |  |
| BAX | BAK | Activation | Activation | Activation | Activation | Activation |
| BAK | BIM | Activation | Activation | Activation | Activation | Activation |
| BIM | Cytochrome c | Activation |  | Activation | Activation | Activation |
| Cytochrome c | APAF-1 | Activation | Activation | Activation | Activation | Activation |
| APAF-1 | CASP9 | Activation | Activation |  |  |  |
| CASP9 | CASP3 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-155 | CASP7 | Inhibition | Activation | Activation | Activation | Activation |
| miR-155 | CASP3 | Inhibition | Inhibition | Inhibition |  | Inhibition |
| miR-378 | CASP3 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| let-7 | Bcl-2, MCL1 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-125b | Bcl-2, MCL1 | Inhibition | Inhibition | Inhibition |  | Inhibition |
| miR-29 | Bcl-2, MCL1 | Inhibition | Activation | Activation | Activation | Activation |
| miR-101 | BAX | Activation | Activation | Activation | Activation | Activation |
| miR-125b | Bcl-2, MCL1 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-193a-3p | Bcl-2, MCL1 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-133b | Bcl-2, MCL1 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-193b | BAX | Activation | Activation | Activation | Activation | Activation |
| miR-221/222 | BAX | Activation |  |  |  |  |
| miR-296-5p | BAX | Activation | Activation | Activation | Activation | Activation |
| miR-128 | BAX | Activation |  |  |  |  |
| miR-886-5p | BIM | Activation | Activation | Activation | Activation | Activation |
| miR-24 | BIM | Activation | Activation | Activation | Activation | Activation |
| miR-181a | BIM | Activation | Activation | Activation | Activation | Activation |
| miR-301a | BIM | Activation | Activation | Activation | Activation | Activation |
| miR-494 | BIM | Activation | Activation | Activation | Activation | Activation |
| miR-17-92 cluster | BIM | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-106b-25 cluster | Bcl-2, MCL1 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-1 | Bcl-2, MCL1 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-7 | Bcl-2, MCL1 | Inhibition |  |  |  |  |
| miR-15/16 family | Bcl-2, MCL1 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-34a | Bcl-2, MCL1 | Inhibition |  |  |  |  |
| miR-136 | Bcl-2, MCL1 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-143 | Bcl-2, MCL1 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-148a | Bcl-2, MCL1 | Inhibition | Inhibition | Inhibition |  |  |
| miR-181a | Bcl-2, MCL1 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-365 | Bcl-2, MCL1 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |

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| Starter | Receptor | Relation | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| Myc | miR-22 | Activation | Activation | Activation | Activation | Activation |
| miR-22 | PTEN | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-22 | TET | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| PTEN | PI3K/AKT | Inhibition | Activation | Activation |  |  |
| TET | Gene Expression (OFF) | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| PI3K/AKT | Tumorigenesis/Metastasis | Activation |  |  |  |  |
| Gene Expression (OFF) | Tumorigenesis/Metastasis | Activation | Activation | Activation | Activation | Activation |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relation | GPT-4 | Claude-3 | GEMINI | pathway |
| DNA damage | ATM | Activation | Activation | Activation | Activation | Activation |
| DNA damage | ATR | Activation | Activation | Activation | Activation | Activation |
| ATM | p53 | Activation |  |  |  |  |
| ATR | p53 | Activation | Activation | Activation | Activation | Activation |
| Oncogene signaling | p14ARF | Activation | Activation |  |  |  |
| Replication stress | p14ARF | Activation | Activation | Activation | Activation | Activation |
| p14ARF | MDM2 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| MDM2 | p53 | Inhibition |  |  |  |  |
| p53 | p21 | Activation | Activation | Activation | Activation | Activation |
| p53 | Bax | Activation | Activation | Activation | Activation | Activation |
| Twist | p16 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| p16 | Rb | Activation | Activation | Activation | Activation | Activation |
| Twist | p14ARF | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Twist | p21 | Inhibition | Inhibition | Activation | Activation | Activation |
| Twist | NF-ÎºB | Activation |  |  |  |  |
| NF-ÎºB | Twist | Activation | Activation | Activation | Activation | Activation |
| NF-ÎºB | YB-1 | Activation | Activation | Activation | Activation | Activation |
| NF-ÎºB | AKT2 | Activation | Activation | Activation | Activation | Activation |
| YB-1 | AKT2 | Activation | Activation | Activation | Activation | Activation |
| AKT2 | Cellular proliferation/Resistance to chemotherapy | Activation | Activation | Activation | Activation | Activation |
| Myc | Cellular proliferation/Resistance to chemotherapy | Activation | Activation | Activation | Activation | Activation |
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| Starter | Receptor | Relation | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| LAB | Intrinsic pathway | Activation | Activation | Activation | Activation | Activation |
| LAB | Extrinsic pathway | Activation | Activation | Activation | Activation | Activation |
| Chemotherapy/Radiotherapy | Intrinsic pathway | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| Fas/TNF receptor | Caspase 8,10 | Activation |  |  |  |  |
| FLIP | Caspase 8,10 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Caspase 8,10 | Caspase 3,6,7 | Activation | Activation | Activation | Activation | Activation |
| Cell injury | NF-ÎºB | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| NF-ÎºB | Bcl-2 | Activation | Activation | Activation | Activation | Activation |
| NF-ÎºB | Bcl-xl | Activation | Activation |  |  |  |
| NF-ÎºB | Caspase 8,10 | Activation | Activation | Activation | Activation | Activation |
| Bcl-2/Bcl-xl | Bak | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Bak | Mitochondria | Activation | Activation | Activation | Activation | Activation |
| Mitochondria | Cytochrome C | Activation |  |  |  |  |
| Cytochrome C | Caspase 9 | Activation | Activation | Activation | Activation | Activation |
| Caspase 9 | Caspase 3,6,7 | Activation | Activation | Activation | Activation | Activation |
| IAP | Caspase 3,6,7 | Inhibition | Inhibition | Inhibition | I | I |
| Caspase 3,6,7 | Apoptosis | Activation | Activation | Activation | Activation | Activation |

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| Starter | Receptor | Relation | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| Hypoxia | ROS | Activation | Activation | Activation | Activation | Activation |
| ROS | PHD3 | Inhibition | Inhibition | Inhibition |  | Activation |
| ROS | MAOA | Activation | Activation | Activation | Activation | Activation |
| PHD3 | HIF1Î± | Inhibition | Activation |  |  |  |
| HIF1Î± | VEGF-A | Activation | Activation | Activation | Activation | Activation |
| VEGF-A | NRP1 | Activation | Activation | Activation | Activation | Activation |
| NRP1 | AKT | Activation |  |  |  |  |
| AKT | FOXO1 | Inhibition | Activation | Activation | Activation | Activation |
| MAOA | PCa tumorigenesis, | Activation | Activation | Activation | Activation | Activation |
| Hypoxia | EMT | Activation |  |  |  |  |
| E-cadherin | TWIST1 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| TWIST1 | EMT | Activation | Activation | Activation | Activation | Activation |
| FOXO1 | Ubiquitination | Activation | Activation | Activation | Activation | Activation |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relation | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| GF | GFR | Activation | Activation | Activation | Activation | Activation |
| GFR | PI3K | Activation | Activation | Activation | Activation | Activation |
| miR-29a | PI3K | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| PI3K | PIP3 | Activation | Activation | Activation | Activation | Activation |
| PTEN | PIP3 | Inhibition |  |  |  |  |
| PIP3 | PDK1 | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| PDK1 | PKB/Akt | Activation | Activation | Activation |  |  |
| PKB/Akt | MDM2 | Activation |  |  |  |  |
| MDM2 | p53 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-24 | p53 | Inhibition | Inhibition |  |  |  |
| miR-24 | MDM2 | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-145 | CREB | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| miR-145 | CBP | Inhibition | Inhibition | Inhibition |  |  |
| CREB | Î²-Catenin | Activation | Activation | Inhibition | Inhibition | Inhibition |
| CBP | TCF/LEF | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| Ras | Raf | Activation | Activation | Activation | Activation | Activation |
| Raf | MEK | Activation |  |  |  |  |
| MEK | ERK | Activation | Activation | Activation | Activation | Activation |
| GSK3 | Î²-Catenin | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| IKK | IÎºB | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| IÎºB | NF-ÎºB | Activation | Inhibition | Inhibition |  | Inhibition |
| NF-ÎºB | Cell Survival | Activation | Activation | Activation | Activation | Activation |
| mTOR | Tumor Growth | Activation | Activation | Activation |  | Activation |
| CDK2 | Cyclin E | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Cyclin E | p27 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Rb | E2F | Activation | Activation | Activation | Activation | Activation |
| E2F | G1/S Progression | Activation | Activation |  |  |  |
| Î²-Catenin | Cell Proliferation | Activation |  | Inhibition |  | Inhibition |
| TCF/LEF | Cell Proliferation | Activation | Activation | Activation | Activation | Activation |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relation | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| CFZ | NF-ÎºB | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| CPT-11 | IÎºB | Inhibition | Activation | Activation |  | Activation |
| IÎºB | NF-ÎºB | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| MEK | ERK | Activation |  |  | Activation |  |
| ERK | NF-ÎºB | Activation | Activation | Activation | Activation | Activation |
| PI3K | AKT | Activation | Activation | Activation | Activation | Activation |
| AKT | NF-ÎºB | Activation | Activation |  | Activation | Activation |
| NF-ÎºB | p21 | Activation | Activation | Activation |  | Activation |
| NF-ÎºB | CD95 | Activation | Activation | Activation | Activation | Activation |
| CD95 | Caspase 3 | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| NF-ÎºB | P38 | Activation |  |  | Activation |  |
| NF-ÎºB | MMPs | Activation | Activation | Activation | Activation | Activation |
| MMPs | Metastasis & Invasion | Activation | Inhibition | Inhibition |  | Inhibition |
| NF-ÎºB | Survivin | Activation | Activation | Activation | Activation | Activation |
| Survivin | Proliferation | Activation | Activation | Activation |  | Activation |
| Caspase 3 | Apoptosis | Activation | Inhibition | Inhibition | Inhibition | Inhibition |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relation | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| Receptor-specific ligands | HER1/EGFR | Activation | Activation | Activation | Activation | Activation |
| Receptor-specific ligands | HER2 | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| Receptor-specific ligands | HER3 | Activation | Activation | Activation | Activation | Activation |
| Receptor-specific ligands | HER4 | Activation |  |  |  |  |
| HER1/EGFR | PI3K | Activation | Activation | Activation | Activation | Activation |
| HER2 | PI3K | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| HER3 | PI3K | Activation | Activation | Activation | Activation | Activation |
| HER4 | PI3K | Activation |  |  |  |  |
| PI3K | Akt | Activation | Activation | Activation | Activation | Activation |
| Akt | mTor | Activation | Activation | Activation | Activation | Activation |
| 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 | MAPK | Activation | Activation | Activation | Activation | Activation |
| MAPK | Cell Survival | Activation | Activation | Activation | Activation | Activation |
| Trastuzumab | HER2 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Pertuzumab | HER2 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Nimotuzumab | HER1/EGFR | Inhibition | Activation | Activation | Activation | Activation |
| Cetuximab | HER1/EGFR | Inhibition | Activation | Activation | Activation | Activation |
| Panitumumab | HER1/EGFR | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relation | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| EGFR | Protein X | Activation | Activation | Inhibition | Inhibition | Inhibition |
| EGFR | SRC | Activation | Activation | Activation | Activation | Activation |
| EGFR | MEK1/2 | Activation |  | Activation | Activation | Activation |
| EGFR | Akt | Activation | Activation | Activation |  | Activation |
| Protein X | SRC | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| Protein X | Akt | Activation | Activation | Activation |  |  |
| SRC | JNK | Activation |  | Inhibition | Inhibition | Inhibition |
| JNK | C-Jun | Activation | Activation | Activation |  | Activation |
| C-Jun | Motility/Invasion | Activation | Inhibition |  | Inhibition | Inhibition |
| MEK1/2 | Erk1/2 | Activation | Activation | Inhibition | Inhibition | Inhibition |
| Erk1/2 | Proliferation/Cell Cycle Progression | Activation | Activation | Activation | Activation | Activation |
| Akt | Angiogenesis/Survival | Activation | Activation | Activation | Activation | Activation |
| Hydralazine | Protein X | Inhibition |  |  |  |  |
| Hydralazine | Akt | Inhibition | Inhibition | Inhibition | Activation | Inhibition |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relation | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| DKK4 | LRP6 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Wnt | FZD | Activation | Activation | Activation | Activation | Activation |
| FZD | LRP6 | Activation | Activation | Activation | Activation | Activation |
| LRP6 | Axin/GSK3/APC | Inhibition | Activation |  |  |  |
| Axin/GSK3/APC | B-Catenin | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| B-Catenin | Ubiquitination | Activation | Activation |  |  |  |
| DVL | B-Catenin | Activation | Activation | Activation | Activation | Activation |
| B-Catenin | LEF-1/TCF (in the nucleus) | Activation | Activation | Activation | Activation | Activation |
| LEF-1/TCF | Target Genes (Myc, Cyclin D1, Axin2, DKK4, CD44, TCF1) | Activation |  |  |  |  |
| LEF-1/TCF | PITX2 | Activation | Activation | Activation | Activation | Activation |
| NKD1 | DVL | Inhibition | Activation | Inhibition | Inhibition | Inhibition |
| LEF-1 | PITX2 | Activation | Activation | Activation | Activation | Activation |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relation | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| Lipoixins/Epi-Lipoixins | PLC | Activation | Activation | Activation | Activation | Activation |
| Lipoixins/Epi-Lipoixins | PI3K | Activation | Activation |  | Activation | Activation |
| Lipoixins/Epi-Lipoixins | RAS | Activation |  | Activation | Activation | Activation |
| Lipoixins/Epi-Lipoixins | PIPP | Activation | Activation | Activation | Inhibition |  |
| Lipoixins/Epi-Lipoixins | JAK | Activation | Activation |  | Activation | Activation |
| Lipoixins/Epi-Lipoixins | SAA | Activation | Activation | Activation |  | Activation |
| Lipoixins/Epi-Lipoixins | SOCS | Activation |  | Activation | Activation | Activation |
| Lipoixins/Epi-Lipoixins | AKT | Activation | Activation | Activation | Activation | Activation |
| Lipoixins/Epi-Lipoixins | MPO | Activation | Activation | Activation |  |  |
| PIPP | PLD | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| PLC | IP3 | Activation | Activation | Activation | Activation | Activation |
| PLC | DAG | Activation |  |  |  |  |
| PI3K | AKT | Activation | Activation | Activation |  | Activation |
| RAS | RAF | Activation | Activation | Activation | Activation | Activation |
| RAF | MEK | Activation | Activation |  |  |  |
| MEK | ERK1/2 | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| ERK1/2 | TNF | Activation | Inhibition | Inhibition |  | Inhibition |
| TNF | STAT | Activation | Activation | Activation | Activation | Activation |
| JAK | AP-1 | Activation | Activation | Activation |  | Activation |
| NF-ÎºB | Nrf2 | Activation | Activation | Activation | Activation | Activation |
| NF-ÎºB | Transcription | Activation | Activation | Activation | Activation | Activation |
| NF-ÎºB | Transcription | Activation | Activation | Activation | Activation | Activation |
| STAT | PPARÎ³ | Activation | Activation | Activation | Activation | Activation |
| STAT | Transcription | Activation | Inhibition |  |  |  |
| AP-1 | Transcription | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| Nrf2 | Transcription | Activation | Activation | Activation | Activation | Activation |
| NAB1 | EGR1 | Inhibition | Inhibition | Inhibition |  | Inhibition |
| SOCS | RAS | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| SOCS | JAK | Activation |  |  |  |  |
| SAA | NF-ÎºB | Activation | Activation | Activation | Activation | Activation |
| MPO | NF-ÎºB | Activation | Activation | Activation |  | Activation |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relation | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| Tyrosine kinase receptor | PI3K | Activation | Activation | Activation | Activation | Activation |
| PI3K | PtdIns(4,5)P2 | Activation | Activation | Activation | Activation | Activation |
| PI3K | PtdIns(3,4,5)P3 | Activation | Activation |  | Inhibition |  |
| PI3K | PTEN | Inhibition | Inhibition | Inhibition |  | Inhibition |
| PtdIns(3,4,5)P3 | PDK1 | Activation | Activation | Activation | Activation | Activation |
| PDK1 | AKT | Activation | Activation | Activation | Activation | Activation |
| mTORC2 | AKT | Activation | Activation |  | Activation | Activation |
| AKT | TSC2 | Inhibition | Activation | Activation |  | Activation |
| AKT | FOXO | Inhibition | Activation | Activation | Activation | Activation |
| AKT | p21 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| AKT | p27 | Inhibition |  |  |  |  |
| AKT | BAD | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| AKT | GSK3 | Inhibition |  |  |  |  |
| TSC2 | mTORC1 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| mTORC1 | Tumor Growth | Activation | Activation | Activation |  | Activation |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relation | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| Reg IV | EGFR | Activation | Activation | Activation | Activation | Activation |
| EGFR | PI3K | Activation | Activation |  |  |  |
| EGFR | Akt | Activation | Activation | Activation | Activation | Activation |
| PI3K | Akt | Activation | Inhibition | Inhibition |  |  |
| Akt | AP-1 | Activation |  |  | Activation | Activation |
| Akt | DPD | Activation | Activation | Activation | Activation | Activation |
| AP-1 | Bcl-xL | Activation | Activation | Activation | Activation | Activation |
| AP-1 | Bcl-2 | Activation |  |  | Inhibition | Inhibition |
| DPD | 5-FU resistance | Activation | Inhibition | Inhibition |  |  |
| Bcl-xL | Inhibition of apoptosis | Activation | Activation | Activation | Activation | Activation |
| Bcl-2 | Inhibition of apoptosis | Activation | Activation | Activation | Activation | Activation |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relation | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| Tumor cells | PD-L1 | Activation | Activation | Activation | Activation | Activation |
| PD-L1 | PD-1 | Activation | Activation |  | Activation |  |
| 2-Oct | PD-L2 | Activation |  | Activation | Activation | Activation |
| PD-L2 | PD-1 | Activation | Activation | Activation |  | Activation |
| PD-1 | RAS | Activation | Activation | Activation | Activation | Activation |
| PD-1 | SHP-1/2 | Activation |  | Activation |  | Activation |
| PD-1 | PI3K | Activation | Activation | Activation | Activation | Activation |
| PD-1 | BATF | Activation | Activation |  | Activation |  |
| PD-1 | JNK | Activation | Activation | Activation | Activation | Activation |
| RAS | MEK | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| MEK | ERK | Activation | Activation |  |  |  |
| SHP-1/2 | FoxO1 | Inhibition | Inhibition | Inhibition |  | Inhibition |
| PI3K | AKT | Activation | Activation | Activation | Activation | Activation |
| AKT | mTOR | Activation | Activation |  |  |  |
| AKT | NF-ÎºB | Activation |  | Activation | Activation | Activation |
| AKT | FoxO1 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| JNK | STAT3 | Activation | Activation |  |  |  |
| STAT3 | NFATc1 | Activation | Activation | Activation | Activation | Activation |
| TCR-B7-CD28 | NFATc1 | Activation |  | Activation | Activation | Activation |

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relation | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| LC | PLGF | Activation | Activation |  | Activation | Activation |
| PLGF | ERK/MAPK | Activation | Activation | Activation |  | Activation |
| ERK/MAPK | MMP3 | Activation | Activation | Activation | Activation | Activation |
| PLGF | VEGFR1 | Activation |  | Activation |  |  |
| VEGFR1 | TGFÎ²1 | Activation | Activation |  | Activation | Activation |
| TGFÎ²1 | Polarization | Activation | Activation | Activation | Activation | Activation |
| Polarization | MMP9 | Activation |  | Activation |  |  |
| LC | Metastasis | Activation | Activation |  | Activation | Activation |
| Macrophages | Metastasis | Activation | Activation | Activation |  |  |

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

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| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relation | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| RANKL | RANK | Activation | Activation | Activation |  | Activation |
| RANK | Src | Activation | Activation | Activation | Activation | Activation |
| Src | ERK | Activation | Activation | Activation | Activation |  |
| Src | AKT | Activation |  |  | Activation |  |
| Cbl-b | Src | Inhibition | Inhibition | Inhibition |  | Inhibition |
| ERK | Tumor migration and metastasis | Activation | Activation | Activation | Inhibition | Activation |
| AKT | Tumor migration and metastasis | Activation | Activation | Activation | Activation | Activation |

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|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Starter | Receptor | Relation | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| Glutamine | Glutamate | Activation | Activation | Activation | Activation | Activation |
| Glutamate | GSH | Activation | Activation |  | Activation | Activation |
| Glycine | GSH | Activation | Activation | Activation |  |  |
| Cysteine | GSH | Activation | Activation | Activation | Activation | Activation |
| GSH | Redox control | Activation |  |  | Activation | Activation |
| Citrate | Isocitrate | Activation | Activation | Activation |  |  |
| Isocitrate | NADPH | Activation | Activation | Activation | Activation | Activation |
| NADPH | Redox control | Activation | Inhibition | Inhibition | Activation | Activation |
| Glucose | Glucose-6-P | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| Glucose-6-P | PEP | Activation | Activation | Activation | Inhibition | Inhibition |
| PEP | Pyruvate | Activation |  |  | Activation | Activation |
| Pyruvate | Acetyl-CoA | Activation |  |  |  |  |
| Acetyl-CoA | Citrate | Activation | Activation | Activation |  |  |
| OAA | Malate | Activation | Activation | Activation | Activation | Activation |
| Malate | Fumarate | Activation | Activation | Activation | Activation | Activation |
| Fumarate | Succinate | Activation | Activation |  | Activation | Activation |
| Succinate | Su-CoA | Activation | Activation | Activation |  |  |
| Su-CoA | Î±-Keto | Activation | Activation | Activation | Activation | Activation |
| Î±-Keto | Isocitrate | Activation | Activation | Activation |  | Activation |
| Isocitrate | Citrate | Activation | Activation | Activation |  | Activation |
| Citrate | Acetyl-CoA | Inhibition | Inhibition | Inhibition | Activation | Activation |
| PDH | Acetyl-CoA | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| PKM2 | Pyruvate | Inhibition | Inhibition | Inhibition |  | Inhibition |
| SDH | Succinate | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| ME1 | NADPH | Activation |  |  | Inhibition | Inhibition |
| IDH | NADPH | Activation | Activation | Activation |  |  |

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| --- | --- | --- | --- | --- | --- | --- |
| Start Gene | Receiver Gene | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| ANG II | AGTR1 | Activation | Activation | Activation | Activation |  |
| AGTR1 | PKC? | Activation | Inhibition |  |  | Activation |
| PKC? | CARMA3 | Activation |  | Activation | Activation |  |
| CARMA3 | BCL-10 | Activation | Activation | Activation |  | Activation |
| CARMA3 | MALT1 | Activation | Activation | Activation | Activation | Activation |
| AGTR1 | ROS | Activation | Inhibition | Inhibition |  | Activation |
| ROS | EGFR | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| EGFR | GRB2 | Activation |  | Activation | Activation | Inhibition |
| GRB2 | SHC | Activation | Activation |  |  | Activation |
| EGFR | ERK | Activation | Activation | Activation | Activation |  |
| ANG II | EGFR | Activation | Activation | Activation | Activation | Activation |
| ANG II | EMT | Activation |  |  |  | Activation |
| IÎºBÎ± | NF-ÎºB | Activation | Activation | Activation | Activation |  |
| BCL-10 | IÎºBÎ± | Activation | Activation | Activation |  | Activation |
| MALT1 | IÎºBÎ± | Activation | Activation | Activation | Activation | Activation |
| NF-ÎºB | Proliferation | Activation | Activation | Activation | Activation | Activation |
| NF-ÎºB | Migration | Activation | Activation | Activation |  | Activation |
| NF-ÎºB | Survival | Activation | Activation | Activation | Activation | Activation |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Start** | **Receiver** | **Relationship** | GPT-4o | Claude-3.5 | | Gemini-1.5 | | | Llama-3.2 |
| EGFR | PI3K | Activation | Activation | | Activation | | Activation | Activation | |
| EGFR | Grb2 | Activation |  | | Activation | |  |  | |
| Grb2 | Sos | Activation | Inhibition | | Inhibition | | Inhibition | Inhibition | |
| Sos | Ras | Activation | Activation | |  | | Activation |  | |
| Ras | Raf | Activation |  | | Activation | | Activation | Activation | |
| Raf | MEK1/2 | Activation | Activation | | Activation | | Activation | Activation | |
| MEK1/2 | ERK1/2 | Activation | Activation | | Activation | |  | Activation | |
| PI3K | Akt | Activation | Activation | |  | |  |  | |
| Akt | TSC1/2 | Inhibition |  | | Inhibition | | Inhibition | Inhibition | |
| PTEN | PI3K | Inhibition | Inhibition | | Activation | | Activation | Activation | |
| TSC1/2 | mTORC1 | Inhibition | Activation | | Activation | | Activation | Activation | |
| mTORC1 | S6K1 | Activation | Activation | |  | | Activation | Activation | |
| mTORC1 | 4E-BP1 | Inhibition | Inhibition | | Inhibition | |  |  | |
| IRS1 | PI3K | Activation | Activation | | Activation | | Activation | Activation | |
| IGF1R/IR | IRS1 | Activation | Activation | |  | |  |  | |
| Growth factor | EGFR | Activation | Inhibition | | Inhibition | | Inhibition | Inhibition | |
| EGFR | STAT | Activation | Activation | | Activation | | Activation | Activation | |
| EGFR | JAK | Activation | Activation | | Activation | | Activation | Activation | |
| EGFR | PLC | Activation |  | |  | | Activation | Activation | |
| PLC | PKC | Activation | Activation | | Activation | |  |  | |
| JAK | STAT | Activation | Activation | | Activation | | Activation | Activation | |

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

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| --- | --- | --- | --- | --- | --- | --- |
| Start | Receiver | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| GLUT | Glucose | Activation | Activation | Activation | Activation | Activation |
| Glucose | Glycogen | Activation | Activation | Activation | Activation |  |
| Glucose | Pyruvate | Activation | Activation | Activation | Activation | Activation |
| Pyruvate | Lactate | Activation |  | Inhibition | Inhibition | Inhibition |
| Pyruvate | AcCoA | Activation | Inhibition |  | Activation |  |
| AcCoA | TCA | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| Fats | LD | Activation | Activation | Activation | Activation | Activation |
| Phospholipids | LD | Activation | Activation | Activation |  | Activation |
| PI3K | AKT | Activation | Activation | Activation | Activation | Activation |
| AKT | mTOR | Activation | Activation | Activation |  | Activation |
| AMPK | AKT | Activation |  | Activation | Activation | Activation |
| MYC | HIF | Activation | Activation |  | Inhibition |  |
| AMPK | mTOR | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| PTEN | PI3K | Inhibition | Inhibition | Inhibition |  | Inhibition |
| p53 | PTEN | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| HIF | RNA-DNA synthesis | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| AKT | PTEN | Activation |  | Activation | Activation | Activation |
| AKT | Fats | Activation | Activation | Activation | Activation | Activation |
| MYC | mTOR | Activation | Activation |  |  |  |
| HIF | AcCoA | Activation | Activation | Activation | Activation | Activation |
| PI3K | PTEN | Activation | Activation | Activation |  | Activation |
| mTOR | Fats | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| mTOR | Phospholipids | Activation | Inhibition |  |  |  |
| AKT | LD | Activation | Activation | Activation | Activation | Activation |

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|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Start | Receiver | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| BMP2 | Smad1/5/8 | Activation | Activation | Activation |  | Activation |
| BMP2 | PDK1 | Activation | Activation | Activation | Activation | Activation |
| Smad1/5/8 | Samd4 | Activation | Activation | Activation | Activation | Activation |
| Samd4 | p53 | Activation | Activation | Activation |  | Activation |
| p53 | p21 | Activation | Inhibition | Inhibition | Activation | Inhibition |
| PDK1 | AKT | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| AKT | GSK3Î² | Activation | Activation | Activation |  | Activation |
| RASSF1 | MST1/2 | Activation | Activation | Activation | Activation | Activation |
| MST1/2 | SAV1 | Activation | Activation | Activation |  | Activation |
| SAV1 | LATS1/2 | Activation | Activation | Activation | Activation | Activation |
| LATS1/2 | MOB1 | Activation |  |  | Activation |  |
| MOB1 | YAP | Activation | Activation | Activation |  | Activation |
| YAP | TEAD | Activation | Activation | Activation | Activation | Activation |
| YAP | Cell proliferation and Anti-apoptosis | Activation | Activation | Activation | Activation | Activation |
| GSK3Î² | CDK4/6 | Activation | Activation | Activation | Activation | Activation |
| CDK4/6 | Cyclin D1 | Activation |  |  | Activation |  |
| p21 | Cyclin D1 | Inhibition | Inhibition | Inhibition |  | Inhibition |
| GSK3Î² | YAP | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| p21 | Cell proliferation and Anti-apoptosis | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| BMP2 | YAP | Activation | Activation | Activation | Inhibition | Activation |

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| --- | --- | --- | --- | --- | --- | --- |
| Start | Receiver | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| EGCG | BAX | Activation | Activation | Activation |  | Activation |
| EGCG | BAK | Activation | Activation |  | Activation |  |
| EGCG | IGF-IR | Activation | Activation | Activation |  | Activation |
| IGF-IR | MAP3K | Activation |  |  | Activation |  |
| MAP3K | MAP2K | Activation | Activation | Activation |  | Activation |
| MAP2K | MAPK | Activation |  |  | Activation |  |
| MAPK | Survival Proliferation | Activation | Activation | Activation |  | Activation |
| EGCG | DNMT | Inhibition | Inhibition | Inhibition | Activation | Inhibition |
| EGCG | Telomerase | Inhibition |  |  | Inhibition |  |
| EGCG | MMP-2 | Inhibition | Inhibition | Inhibition |  | Inhibition |
| EGCG | MMP-3 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| EGCG | MMP-9 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| EGCG | HER2, EGFR (Oncogenes) | Inhibition |  |  | Inhibition |  |
| EGCG | p53, PTEN (Tumor Suppressor Genes) | Inhibition | Inhibition | Inhibition |  | Inhibition |
| EGCG | NF-ÎºB | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| EGCG | HIF-1Î± | Inhibition | Inhibition |  | Inhibition |  |
| EGCG | BCL-2 | Inhibition | Inhibition | Inhibition |  | Inhibition |
| EGCG | BCL-XL | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| EGCG | Inflammation, Proliferation, Metastasis | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |

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|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Start | Receiver | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| HGF | MET | Activation | Activation | Activation | Activation | Activation |
| MET | STAT3 | Activation | Activation | Activation |  | Activation |
| MET | RAS | Activation |  | Inhibition | Inhibition | Inhibition |
| EGF | EGFR | Activation | Activation | Activation | Activation | Activation |
| EGFR | RAS | Activation | Inhibition |  |  |  |
| RAS | RAF | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| RAF | MEK | Activation | Activation | Activation | Activation | Activation |
| MEK | ERK | Activation |  |  |  |  |
| ERK | DNA (Cell growth and proliferation) | Activation | Activation | Activation | Activation | Activation |
| EGFR | PI3K | Activation | Activation | Activation |  | Activation |
| PI3K | AKT | Activation | Activation |  |  |  |
| AKT | mTOR | Activation | Activation | Activation | Activation | Activation |
| mTOR | DNA (Cell growth and proliferation) | Activation | Activation | Activation | Activation | Activation |
| Tivantinib | MET | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Cetuximab | EGFR | Inhibition | Inhibition | Inhibition |  | Inhibition |
| Panitumumab | EGFR | Inhibition | Inhibition |  | Inhibition | Inhibition |
| Alpelisib | PI3K | Inhibition | Inhibition | Inhibition |  | Inhibition |

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|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Start | Receiver | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| AMPK | p53 | Activation | Activation | Activation |  | Activation |
| AMPK | p27 | Activation | Activation |  | Activation |  |
| AMPK | TSC2 | Activation | Activation | Activation |  | Activation |
| AMPK | Raptor | Activation |  |  | Activation |  |
| AMPK | HIF-1Î± | Activation | Activation | Activation |  | Activation |
| p53 | Cyclin A/B1 | Activation | Activation |  | Activation |  |
| p27 | Ras/B-Raf | Activation | Activation | Activation |  | Activation |
| Cyclin A/B1 | Impaired cell proliferation | Activation |  |  | Activation |  |
| Ras/B-Raf | Impaired cell proliferation | Activation | Activation | Activation |  | Activation |
| TSC2 | mTORC1 | Activation | Activation | Activation | Activation | Activation |
| Raptor | mTORC1 | Activation | Activation | Activation | Activation | Activation |
| mTORC1 | Protein synthesis and cell growth | Activation | Activation | Activation | Activation | Activation |
| Hippo | Protein synthesis and cell growth | Activation | Activation | Activation | Activation | Activation |
| HIF-1Î± | Warburg effect | Activation |  |  | Activation |  |
| AMPK | Tumorigenesis | Inhibition | Inhibition | Inhibition |  | Inhibition |
| Protein synthesis and cell growth | Tumor growth inhibition | Inhibition | Inhibition |  | Inhibition |  |
| Oncogenes | Tumorigenesis | Activation | Activation | Activation |  | Activation |

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| --- | --- | --- | --- | --- | --- | --- |
| Start | Receiver | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| LincRNA-P21 | CCAL | Activation | Activation | Activation |  | Activation |
| MALAT1 | CCAT2 | Activation | Activation |  | Activation | Activation |
| CCAL | AP2Î± | Activation |  |  | Activation |  |
| CCAL | Wnt/Î²-catenin Signal pathway | Activation | Activation | Activation |  | Activation |
| MALAT1 | CASC11 | Activation | Activation | Activation | Activation | Activation |
| CASC11 | MYC | Activation |  |  | Activation |  |
| CCAT2 | AP2Î± | Activation | Activation | Activation |  | Activation |
| CCAT2 | Wnt/Î²-catenin Signal pathway | Activation | Activation | Activation | Activation | Activation |
| miR-204-5p | CREB1 | Activation | Activation | Activation | Activation | Activation |
| miR-204-5p | BCL2 | Activation | Activation | Activation | Activation | Activation |
| miR-204-5p | RAB22A | Activation | Activation |  | Activation | Activation |
| CTD903 | miR-675 | Activation | Activation | Activation | Activation | Activation |
| miR-675 | H19 | Activation | Activation | Activation | Activation | Activation |
| H19 | Cell cycle gene | Activation | Activation | Activation | Activation | Activation |
| H19 | eIF4A3 | Activation |  |  | Activation |  |
| GAPLINC | CD44 | Activation | Activation | Activation |  | Activation |
| miR-211-3p | Wnt/Î²-catenin Signal pathway | Activation | Activation | Activation | Activation | Activation |
| CD44 | Proliferation | Activation | Activation | Activation | Activation | Activation |
| CD44 | Migration | Activation | Activation | Activation | Activation | Activation |
| CD44 | Invasion | Activation | Activation | Activation | Activation | Activation |
| p53 | Loc285195 | Inhibition | Activation | Activation | Activation | Activation |
| Loc285195 | miR-211 | Inhibition | Activation | Activation | Activation | Activation |
| miR-106a-5p | PTEN | Inhibition | Inhibition | Inhibition | Activation | Inhibition |
| FER1L4 | miR-106a-5p | Inhibition | Inhibition | Activation | Inhibition | Inhibition |
| H19 | HyperMethylation | Inhibition | Inhibition | Activation | Inhibition | Inhibition |
| Wnt/Î²-catenin Signal pathway | Proliferation | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| Wnt/Î²-catenin Signal pathway | Migration | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| Wnt/Î²-catenin Signal pathway | Invasion | Activation | Activation | Activation | Inhibition | Activation |

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| --- | --- | --- | --- | --- | --- | --- |
| Start | Receiver | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| GPCR | Rho | Activation | Activation | Activation | Activation | Activation |
| Rho | ROCK1/2 | Activation | Activation | Activation |  | Activation |
| RTK | MEK1/2 | Activation | Activation |  | Inhibition | Inhibition |
| MEK1/2 | ERK1/2 | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| NF2 | LATS1/2 | Activation | Inhibition | Inhibition | Activation | Activation |
| ROCK1/2 | YAP | Activation | Activation | Activation |  |  |
| LATS1/2 | YAP | Activation |  | Activation | Activation | Activation |
| ERK1/2 | YAP | Activation | Activation | Activation |  | Activation |
| YAP | TEAD | Activation | Activation | Activation | Activation | Activation |
| TEAD | CTGF | Activation | Activation |  |  |  |
| TEAD | Cyr61 | Activation | Activation | Activation | Activation | Activation |
| ROCK1/2 inhibitor | ROCK1/2 | Inhibition |  |  | Inhibition |  |
| MEK1/2 inhibitor | MEK1/2 | Inhibition | Inhibition | Inhibition |  | Inhibition |
| ERK1/2 inhibitor | ERK1/2 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| CDK1 inhibitor | YAP | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| CDK9 inhibitor | TEAD | Inhibition | Inhibition | Inhibition |  | Inhibition |
| Verteporfin | YAP | Inhibition | Inhibition | Inhibition |  | Inhibition |

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| --- | --- | --- | --- | --- | --- | --- |
| Start | Receiver | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| Gastric CSC-like cell | MEK | Activation | Activation | Activation | Activation | Activation |
| MEK | ERK | Activation | Activation | Activation | Activation | Activation |
| ERK | RSK1 | Activation | Activation |  | Activation | Activation |
| RSK1 | Sphere formation of CSC-like cell | Activation | Activation | Activation | Inhibition | Activation |
| Aurora A | Plk1 | Activation | Activation |  | Activation | Inhibition |
| Plk1 | MEK | Activation | Activation | Activation | Activation | Activation |
| Plk1 | ERK | Activation | Inhibition | Inhibition | Activation | Activation |
| Plk1 | RSK1 | Activation | Activation |  | Activation | Activation |
| RSK1 | Cancer cell proliferation | Activation | Activation | Activation | Activation | Activation |
| Plk1 | Gastric CSC-like cell | Inhibition | Inhibition |  | Inhibition | Inhibition |

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

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| --- | --- | --- | --- | --- | --- | --- |
| Start | Receiver | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| SP1 | MDM2 | Activation | Activation | Activation |  | Activation |
| MDM2 | E2F1 | Activation | Activation |  | Activation |  |
| MDM2 | pRb | Activation | Activation | Activation |  | Activation |
| Fulvestrant | ER | Inhibition |  |  | Activation |  |
| shRNA | MDM2 | Inhibition | Inhibition | Inhibition |  | Inhibition |
| Estrogen | MDM2 | Activation | Activation | Activation | Inhibition | Activation |

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| --- | --- | --- | --- | --- | --- | --- |
| Start | Receiver | Relationship | GPT-4 | Claude-3 | GEMINI | pathway |
| PI3K | AKT | Activation | Activation | Activation | Activation | Activation |
| PI3K | BMX | Activation | Activation | Activation | Activation | Activation |
| BMX | AKT | Activation |  |  |  |  |
| AKT | mTOR | Activation | Activation | Activation | Activation | Activation |
| mTOR | Cell cycle | Activation | Activation | Inhibition | Inhibition | Inhibition |
| BMX | STAT3 | Activation | Activation | Activation |  |  |
| STAT3 | Cell proliferation | Activation | Activation | Activation | Activation | Activation |
| Cell proliferation | Tumor progression | Activation | Activation | Activation | Activation | Activation |
| MK-2206 | AKT | Inhibition |  |  |  |  |
| Rapamycin | mTOR | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Cryptotanshinone | STAT3 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |

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| Start | Receiver | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| Polyphenols | PTCH1 | Activation | Activation | Activation | Activation | Activation |
| Polyphenols | SMO | Activation | Activation | Activation | Activation | Activation |
| TGF-Î² | GLI1 | Activation | Activation | Activation | Activation | Activation |
| EGF, FGF, HGF | ERK1/2 | Activation |  | Activation | Activation | Activation |
| EGF, FGF, HGF | AKT | Activation | Activation | Inhibition | Inhibition | Inhibition |
| ERK1/2 | SNAIL | Activation | Inhibition |  |  |  |
| AKT | SNAIL | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| Î²-catenin | SNAIL | Activation | Activation | Activation | Activation | Activation |
| Î²-catenin | ZEB | Activation | Activation | Activation | Activation | Activation |
| Î²-catenin | TWIST | Activation | Activation | Activation | Activation | Activation |
| WNT | Î²-catenin | Activation | Activation | Activation | Activation | Activation |
| Polyphenols | miRNA-200 | Activation | Activation | Activation | Activation | Activation |
| Polyphenols | miRNA let-7 | Activation | Activation | Activation | Activation | Activation |
| E-cadherin | Epithelial | Activation | Activation |  |  |  |
| Polyphenols | TGF-Î² | Inhibition |  |  |  |  |
| Polyphenols | GLI1 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Polyphenols | SNAIL | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Polyphenols | ZEB | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Polyphenols | TWIST | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| TNF-Î± | miRNA-200 | Inhibition |  | Activation | Activation | Activation |
| TNF-Î± | miRNA let-7 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| NF-ÎºB | miRNA-200 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| NF-ÎºB | miRNA let-7 | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |

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| Start | Receiver | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| SAV | MST | Activation | Activation | Activation | Activation | Activation |
| MST | LATS | Activation | Activation |  |  |  |
| MOB | LATS | Activation | Activation | Activation | Activation | Activation |
| LATS | YAP (Hippo pathway inhibition) | Activation |  | Activation | Activation | Activation |
| YAP | TEAD | Activation | Activation | Activation | Activation | Activation |
| TEAD | Cell proliferation, Invasion and metastasis | Activation | Activation | Activation | Activation | Activation |
| miR-590-3p | MST | Inhibition |  |  |  |  |
| 14-3-3 | YAP (Degradation) | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |

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| --- | --- | --- | --- | --- | --- | --- |
| Start | Receiver | Relationship | GPT-4 | Claude-3 | GEMINI | pathway |
| Wnt1 | LRP5/6 | Activation | Activation | Activation | Activation | Activation |
| Wnt3a | LRP5/6 | Activation | Activation | Activation | Activation | Activation |
| Wnt8 | LRP5/6 | Activation | Activation | Activation | Activation | Activation |
| LRP5/6 | Frizzled | Activation |  |  |  |  |
| Frizzled | Dvl | Activation | Activation | Activation | Activation | Activation |
| Dvl | GSK3Î² | Activation |  |  |  |  |
| GSK3Î² | Î²-catenin | Activation | Activation | Activation | Activation | Activation |
| Î²-catenin | Tcf/Lef | Activation | Activation | Activation | Activation | Activation |
| Tcf/Lef | MSX1 | Activation | Activation | Activation | Activation | Activation |
| Tcf/Lef | OPN | Activation | Activation | Activation | Activation | Activation |
| MSX1 | Promotion of tumor growth and metastasis | Activation | Activation | Activation | Activation | Activation |
| OPN | Promotion of tumor growth and metastasis | Activation | Activation | Activation | Activation | Activation |
| DKK1 | LRP5/6 | Inhibition |  |  |  |  |
| PP2A | Î²-catenin degradation | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| HSP70 | Î²-catenin degradation | Inhibition |  |  |  |  |
| Î²-catenin degradation | Inhibition of tumor growth and metastasis | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |

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| --- | --- | --- | --- | --- | --- | --- |
| Start | Receiver | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| TGF-Î²1 | HDAC3 | Activation | Activation | Activation | Activation | Activation |
| RUNX2 | Metastasis | Activation | Activation | Activation | Activation | Activation |
| HDAC3 | ANCR | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |

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| --- | --- | --- | --- | --- | --- | --- |
| Start | Receiver | Relationship | GPT-4 | Claude-3 | GEMINI | pathway |
| EGFR | Shc | Activation | Activation | Activation | Activation | Activation |
| Shc | Grb2 | Activation | Activation | Activation | Activation | Activation |
| Grb2 | Ras | Activation | Activation | Activation | Activation | Activation |
| Ras | Raf | Activation | Activation |  |  |  |
| Raf | MEK1/2 | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| MEK1/2 | ERK1/2 | Activation | Inhibition | Inhibition |  | Inhibition |
| EGFR | PI3K/AKT | Activation | Activation | Activation | Activation | Activation |
| PI3K/AKT | mTOR | Activation |  |  | Inhibition |  |
| mTOR | LC3B | Activation | Activation | Activation | Activation | Activation |
| EGFR | PDK1 | Activation | Activation |  |  |  |
| PDK1 | AKT | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| AKT | NF-ÎºB | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| AKT | IKK | Activation | Activation | Activation | Activation | Activation |
| AKT | FoxO | Activation | Activation | Activation | Activation | Activation |
| FoxO | p21 | Activation |  |  |  |  |
| mTOR | HIF-1Î± | Activation | Activation | Activation | Activation | Activation |
| HIF-1Î± | Cell cycle progression, | Inhibition | Inhibition |  |  |  |
| HCaRG | Transcription (EGFR/ErbB3) | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| mTOR | Autophagy | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| VHL | HIF-1Î± | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |

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| Start | Receiver | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| ZIP1 | PI3K | Activation | Activation | Activation | Activation | Activation |
| PI3K | PDK | Activation | Activation | Activation | Activation | Activation |
| PDK | Akt | Activation | Activation | Activation | Activation | Activation |
| Akt | CDK4 | Activation |  | Activation | Activation | Activation |
| PTEN | PI3K | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| p21 | CDK4 | Inhibition |  | Activation | Activation | Activation |
| Akt | p21 | Activation | Activation |  |  |  |
| p21 | PCNA | Activation | Activation | Activation | Activation | Activation |

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| --- | --- | --- | --- | --- | --- | --- |
| Start | Receiver | Relationship | GPT-4 | Claude-3 | GEMINI | pathway |
| CaSR | #NAME? | Activation | Activation | Activation | Activation | Activation |
| #NAME? | PTHRP | Activation |  | Activation | Activation |  |
| PTHRP | p27 | Activation | Activation | Activation |  | Activation |
| PTHRP | AIF | Activation | Activation |  | Activation |  |
| PTHRP | AIF | Inhibition | Inhibition | Inhibition |  | Inhibition |
| PTHRP | PTHRP | Activation | Activation | Activation | Activation | Activation |

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| --- | --- | --- | --- | --- | --- | --- |
| Start | Receiver | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| HER2 | Activated HER2 | Activation | Activation | Activation | Activation | Activation |
| Activated HER2 | RAS | Activation | Activation | Activation |  | Activation |
| Activated HER2 | AKT | Activation | Activation | Activation | Activation | Activation |
| AKT | Proliferation | Activation |  | Activation | Activation |  |
| HER2 | HER2 expression | Activation | Activation | Activation | Activation | Activation |
| Polyphenols | HER2 activation | Inhibition | Inhibition | Inhibition | Inhibition |  |
| Polyphenols | HER2 degradation | Inhibition | Inhibition | Inhibition |  | Inhibition |
| Polyphenols | FAS expression | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Polyphenols | Antiapoptotic proteins | Inhibition | Inhibition |  |  | Inhibition |
| Polyphenols | RAS | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Polyphenols | FASN | Inhibition |  | Inhibition |  | Inhibition |
| Hsp90 | HER2 degradation | Inhibition | Inhibition |  | Inhibition | Inhibition |

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| --- | --- | --- | --- | --- | --- | --- |
| Start | Receiver | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| HER2 | Activated HER2 | Activation | Activation | Activation | Activation | Activation |
| Activated HER2 | RAS | Activation | Activation | Activation | Activation | Activation |
| Activated HER2 | AKT | Activation | Activation | Activation |  | Activation |
| AKT | Proliferation | Activation | Activation | nhibition | Activation |  |
| HER2 | HER2 expression | Activation | Activation | nhibition | Activation | Activation |
| Polyphenols | HER2 activation | Inhibition | Inhibition | Inhibition |  | Inhibition |
| Polyphenols | HER2 degradation | Inhibition | Activation | Inhibition | Inhibition |  |
| Polyphenols | FAS expression | Inhibition | Activation |  | Inhibition | Inhibition |
| Polyphenols | Antiapoptotic proteins | Inhibition | Inhibition | Inhibition | Inhibition |  |
| Polyphenols | RAS | Inhibition | Inhibition | Inhibition |  | Inhibition |
| Polyphenols | FASN | Inhibition |  | Inhibition | Inhibition |  |
| Hsp90 | HER2 degradation | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |

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|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Start | Receiver | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| Wnt | Î²-catenin | Activation | Activation | Activation | Activation | Activation |
| Frz | Dvl | Activation | Activation |  | Activation | Activation |
| AR | Vimentin | Activation | Activation | Activation | Activation | Activation |
| EGFR | Ras | Activation |  |  |  |  |
| Ras | Raf | Activation | Activation | Activation |  | Activation |
| Raf | MEK | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| MEK | ERK | Activation | Inhibition |  | Inhibition | Inhibition |
| ERK | ELK1 | Activation | Inhibition | Inhibition |  | Inhibition |
| ELK1 | CDKs | Activation | Activation | Activation | Activation | Activation |
| PI3K | AKT | Activation | Activation | Activation |  | Activation |
| AKT | mTOR | Activation | Activation |  | Activation | Activation |
| TGF-Î² | Smad-2/3 | Activation | Activation | Activation | Activation | Activation |
| Smad-2/3 | TBR | Activation | Activation | Activation |  | Activation |
| Dvl | GSK3Î² | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| APC | Î²-catenin | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| PTEN | PI3K | Inhibition |  |  |  |  |
| Slug | E-Cadherin | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Axl | EMT | Inhibition | Inhibition | Inhibition |  | Inhibition |
| Î²-catenin | Î²-catenin | Activation |  |  |  |  |
| TGF-Î² | Smad-7 | Activation | Activation | Activation | Activation | Activation |

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| --- | --- | --- | --- | --- | --- | --- |
| Start | Receiver | Relationship | GPT-4o | Claude-3.5 | Gemini-1.5 | Llama-3.2 |
| TNF-Î± | Caspase-8 | Activation | Activation | Activation | Activation | Activation |
| Caspase-8 | Cyto c | Activation | Activation | Activation | Activation | Activation |
| Cyto c | Caspase-9 | Activation | Activation | Activation |  | Activation |
| Caspase-9 | Caspase-3,6,7 | Activation | Inhibition | Inhibition | Inhibition | Inhibition |
| Caspase-3,6,7 | Apoptosis | Activation | Inhibition | Inhibition |  | Inhibition |
| AAP-H | PI3K | Activation | Activation | Activation | Activation | Activation |
| PI3K | AKT | Activation | Activation | Activation | Activation | Activation |
| AKT | mTOR | Activation | Activation | Activation |  | Activation |
| mTOR | Apoptosis | Activation | Activation | Activation | Activation | Activation |
| Bcl-2 | Bax | Inhibition |  |  |  |  |
| Bcl-xl | Bax | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Bad | Bcl-2 | Inhibition |  |  |  |  |
| Bad | Bcl-xl | Inhibition | Inhibition | Inhibition | Inhibition | Inhibition |
| Bax | Cyto c | Inhibition | Inhibition | Inhibition |  | Inhibition |