

CANCER CHIP

v1. Pharmacogenomic Chip

**GOODGENE Inc.
Cancer Project**

CANCER CHIP v1.0. summary

- Cancer associated DNA chip: KFDA approved product, Korean and universal patented
- Genetic testing to predict response to chemotherapy: (cisplatin/oxali-platin, 5-FU/Capecitabine, Taxotere, Gemzar, Irinotecan), biologic treatment (Cetuximab, Erlotinib, Lapitinib, Panitumuma, etc) to guide personalized cancer therapy
- Mutation (K-RAS, EGFR, BRAF)과 SNP (ERCC1, TS 5-UTR, DPYD*2A, UTG1A1), methylation (BRCA1, MGMT 등), Expression study (TS).
- Biomarker/real time PCR/genotyping assay DNA chip design.

CANCER CHIP v1.0. Contents

A. Mutation (EGFR/RAS pathway)

Gene	Hot spot	Significance
K-ras	codon 12 & 13	Sign of resistance to drugs & antibody targeting EGFR. Sign of poor prognosis
BRAF	exon 5 (V600E)	Sign of resistance to drugs & antibody targeting EGFR
EGFR	exon 21(L858R) exon 18 (G719S) exon 19 (<u>747-752 del</u>)	Sign of response to drugs & antibody targeting EGFR
EGFR	exon 20 (insertion) exon 20 (T790M)	Sign of resistance, primary Sign of resistance, secondary

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B. SNP (Metabolism)

Gene	Hot spot	Significance
ERCC1	codon 118	Repair gene. Related with response to platinum based chemotherapy. T/T vs C/T vs C/C = 62% : 42% : 21%
TS	5'-UTR	Target gene of and related with response to 5-FU/capecitabine. 2R/2R vs 3R/3R: 50% : 8%.
DPD	intron 4 DPYD*2A	Catabolizing enzyme. Related with toxicity to 5-FU/ Capecitabine
UGT1A1	promotor TA repeats No.	Detoxifying enzyme. Related with toxicity to Irinotecan. Higher in 7 repeats variants (*UGT1A1*28)

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C. Promotor Methylation

Gene	Significance
BRCA1	DNA Repair gene. Related with response to taxol and platinum. If methylated, the cancer responds to taxol and resists against platinum.
MGMT	DNA Repair gene. Related with response to temozolamide. If methylated, the cancer responds to temozolamide.

CANCER CHIP v1.0. Tasks

- **Mutation** (K-RAS, EGFR, BRAF)
- **SNP** (ERCC1, TS 5-UTR, DPYD*2A, UTG1A1)
- **Methylation** (BRCA1, MGMT),
- **Expression** (TS)



- current technology (SEQ, Snapshot & Real time PCR)
- 2 color chip & Y probe system
- Control (mutant & wild cell line, Plasmid clone)
- Specimen: PPFE, blood from patient



1. DNA Chip design
(APEX/ASPE)



2. Biomark
system



3. Melting
analysis system



1 : patent & KFDA apporved
2 & 3: test in commercial use

