

Electronic Companion: Final Model Coefficients

The following table contains the coefficients of the ridge regression model trained using the entire database. Columns $\hat{\beta}_{OS}^b$, $\hat{\beta}_{OS}^i$, and $\hat{\beta}_{OS}^a$ represent the coefficients for the binary, instantaneous, and average dosages of each drug in the model predicting median overall survival, while columns $\hat{\beta}_{DLT}^b$, $\hat{\beta}_{DLT}^i$, and $\hat{\beta}_{DLT}^a$ are the same coefficients in the model predicting the proportion of patients with a dose-limiting toxicity. Though the models were trained using normalized versions of these variables, the coefficients in this table have been de-normalized.

Drug	Unit	$\hat{\beta}_{OS}^b$	$\hat{\beta}_{OS}^i$	$\hat{\beta}_{OS}^a$	$\hat{\beta}_{DLT}^b$	$\hat{\beta}_{DLT}^i$	$\hat{\beta}_{DLT}^a$
9-Aminocamptothecin	$\mu\text{g}/\text{m}^2$	-2.83E-02	-4.72E-05	-9.90E-05	-9.29E-04	-1.55E-06	-3.25E-06
Actinomycin	mg	0.00E+00	0.00E+00	0.00E+00	2.45E-04	4.88E-04	6.83E-03
BBR 3438	mg/m^2	-1.82E-01	-3.63E-03	-1.02E-01	1.03E-02	2.06E-04	5.75E-03
Bevacizumab	mg/kg	6.24E-01	6.63E-02	1.36E+00	-4.48E-03	5.77E-04	1.53E-02
BMS-182248-01	mg/m^2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BOF-A2	mg	-1.22E-01	-3.05E-04	-6.10E-04	1.09E-03	2.72E-06	5.43E-06
Bortezomib	mg/m^2	-4.00E-02	-3.16E-02	-1.79E-01	1.33E-02	1.02E-02	5.29E-02
Bryostatins-1	$\mu\text{g}/\text{m}^2$	-4.10E-02	-1.02E-03	-9.55E-03	0.00E+00	0.00E+00	0.00E+00
Caelyx	mg/m^2	3.45E-01	4.37E-03	1.57E-01	-8.98E-04	-8.53E-05	-1.77E-03
Capecitabine	mg/m^2	2.42E-01	2.84E-04	4.97E-04	-4.45E-03	-8.63E-06	2.24E-06
Carboplatin	AUC	-5.05E-02	2.59E-03	-1.93E-02	-9.06E-03	3.47E-04	-2.12E-02
Carmustine	mg/m^2	-2.10E-01	-4.94E-03	-5.26E-02	0.00E+00	0.00E+00	0.00E+00
Cetuximab	mg/m^2	1.82E-01	4.33E-05	2.60E-03	2.14E-03	-1.97E-05	6.92E-05
Cisplatin	mg/m^2	7.01E-01	1.03E-02	-1.64E-02	2.00E-02	1.05E-03	2.49E-03
Cyclophosphamide	mg/m^2	0.00E+00	0.00E+00	0.00E+00	2.44E-04	4.07E-07	5.71E-06
Cytarabine	mg/m^2	1.91E-01	5.79E-03	4.06E-02	2.41E-04	7.31E-06	5.13E-05
DHA-paclitaxel	mg/m^2	1.14E-01	1.04E-04	2.18E-03	0.00E+00	0.00E+00	0.00E+00
Diaziquone	mg/m^2	-2.37E-02	-5.93E-04	-1.25E-02	0.00E+00	0.00E+00	0.00E+00
Docetaxel	mg/m^2	1.13E+00	5.60E-03	9.16E-02	5.47E-02	1.59E-03	1.81E-02
Doxifluridine	mg/m^2	8.30E-02	-2.03E-04	-7.25E-05	-8.43E-03	-1.03E-05	-3.41E-05
Doxorubicin	mg/m^2	3.22E-02	-4.05E-03	2.68E-01	2.51E-02	2.19E-04	2.03E-02
Epirubicin	mg/m^2	2.89E-01	8.36E-03	7.13E-03	1.18E-02	8.33E-05	1.07E-03
Erlotinib	mg	-9.49E-02	-6.32E-04	-6.33E-04	-9.85E-03	-6.57E-05	-6.56E-05
Esorubicin	mg/m^2	-5.26E-02	-1.50E-03	-3.16E-02	0.00E+00	0.00E+00	0.00E+00
Etoposide	mg/m^2	2.61E-01	1.96E-04	-1.05E-02	2.48E-02	2.20E-04	9.36E-04
Everolimus	mg	2.82E-01	2.82E-02	2.82E-02	9.99E-04	1.00E-04	1.00E-04
Flavopiridol	mg/m^2	-7.19E-02	-1.44E-03	-6.71E-03	6.36E-03	1.27E-04	5.94E-04
Fluorouracil	mg/m^2	2.17E-01	3.23E-04	1.50E-04	-2.93E-03	1.14E-05	1.04E-04
Fotemustine	mg/m^2	-7.02E-02	-7.02E-04	-1.47E-02	0.00E+00	0.00E+00	0.00E+00
Gefitinib	mg	-1.43E-01	-5.72E-04	-5.73E-04	-1.83E-02	-7.33E-05	-7.33E-05
Gemcitabine	mg/m^2	1.88E-01	1.33E-04	1.24E-03	-2.30E-03	-3.19E-06	-2.98E-05
Heptaplatin	mg/m^2	-6.39E-02	-2.24E-04	-6.11E-03	-4.04E-03	-9.10E-06	-1.11E-04
IFN	MU	-2.34E-02	-2.60E-03	-5.94E-03	5.42E-03	6.02E-04	1.84E-03
Iproplatin	mg/m^2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Irinotecan	mg/m^2	8.68E-01	6.09E-04	4.99E-02	4.30E-02	3.23E-04	3.45E-03
Irofulven	mg/kg	-9.93E-02	-2.21E-01	-2.32E+00	2.58E-03	5.74E-03	6.03E-02
Ixabepilone	mg/m^2	0.00E+00	0.00E+00	0.00E+00	4.72E-03	3.96E-04	3.54E-03
Lapatinib	mg	-1.39E-01	-9.27E-05	-9.28E-05	0.00E+00	0.00E+00	0.00E+00
Leucovorin	mg/m^2	1.04E+00	1.04E-03	-4.68E-03	3.16E-03	-7.82E-05	5.16E-04
Levoleucovorin	mg/m^2	5.86E-01	1.63E-03	1.90E-02	-9.52E-03	-6.84E-05	-5.71E-04
Lovastatin	mg/kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Matuzumab	mg	-9.54E-02	-1.19E-04	-8.36E-04	4.51E-03	5.63E-06	3.94E-05
Merbarone	mg/m^2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Methotrexate	mg/m^2	-2.58E-01	-2.75E-05	-9.65E-04	-6.21E-04	1.01E-05	2.65E-04
methyl-CCNU	mg/m^2	2.41E-01	1.61E-03	1.12E-01	0.00E+00	0.00E+00	0.00E+00
Mitomycin	mg/m^2	5.26E-01	6.45E-03	-4.65E-01	-1.43E-02	-2.30E-03	3.44E-03

Mitoxantrone	mg/m^2	-1.67E-01	-1.34E-02	-2.60E-01	-6.74E-03	-3.15E-04	-1.14E-02
NK105	mg/m^{2*}	6.47E-01	4.31E-03	9.06E-02	4.84E-03	3.23E-05	6.78E-04
OSI-7904L	mg/m^2	1.53E-01	1.28E-02	2.69E-01	0.00E+00	0.00E+00	0.00E+00
Oxaliplatin	mg/m^2	3.55E-01	6.57E-03	3.21E-02	-1.21E-04	1.50E-04	1.69E-03
Paclitaxel	mg/m^2	8.99E-01	4.29E-03	8.67E-02	5.80E-04	9.47E-05	1.34E-03
PALA	mg/m^2	-6.72E-02	-2.69E-04	-1.88E-03	5.42E-03	2.17E-05	1.52E-04
Pegamotecan	mg/m^2	1.77E-01	2.53E-05	5.31E-04	3.56E-03	5.08E-07	1.07E-05
Pemetrexed	mg/m^2	-1.18E-01	-2.36E-04	-4.95E-03	2.92E-03	5.84E-06	1.23E-04
Pirarubicin	mg	-8.15E-02	-4.08E-03	-5.70E-02	6.68E-05	3.33E-06	4.61E-05
Piroxantrone	mg/m^2	-6.69E-02	-4.46E-04	-9.37E-03	-7.44E-04	-4.96E-06	-1.04E-04
PN401	g	-1.23E-01	-2.57E-03	-2.39E-02	-4.35E-03	-9.04E-05	-8.44E-04
Pravastatin	mg	-8.56E-02	-2.14E-03	-2.14E-03	5.46E-03	1.37E-04	1.37E-04
Raltitrexed	mg/m^2	-1.95E-01	-6.46E-02	-1.36E+00	7.94E-03	2.92E-03	6.13E-02
S-1	mg/m^2	7.51E-01	1.44E-02	1.80E-02	-1.71E-02	9.74E-07	2.89E-06
Saracatinib	mg	6.03E-02	3.45E-04	3.45E-04	1.55E-03	8.85E-06	8.85E-06
Sorafenib	mg	2.55E-01	3.18E-04	3.18E-04	-2.55E-03	-3.18E-06	-3.19E-06
Sunitinib	mg	8.03E-02	1.61E-03	2.41E-03	1.01E-02	2.03E-04	3.04E-04
Thioguanine	mg/m^2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Topotecan	mg/m^2	4.73E-04	3.32E-04	1.35E-03	0.00E+00	0.00E+00	0.00E+00
Trastuzumab	mg/kg	9.17E-01	1.53E-01	3.21E+00	-1.20E-02	-2.00E-03	-4.20E-02
Triazinate	mg/m^2	1.50E-01	7.63E-04	1.32E-02	5.71E-03	2.84E-05	5.53E-04
Trimetrexate	mg/m^2	7.59E-03	-4.45E-03	-2.33E-02	1.19E-02	3.67E-04	2.58E-03
UFT	mg/m^2	2.54E-01	6.14E-04	-2.70E-04	1.20E-02	3.26E-05	4.84E-05
Vincristine	mg/m^2	0.00E+00	0.00E+00	0.00E+00	2.44E-04	1.74E-04	2.45E-03
Vindesine	mg/m^2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Vinorelbine	mg/m^2	1.86E-01	8.89E-03	1.14E-01	2.89E-03	7.71E-05	-1.39E-03

In several cases we converted between different dosing units so all dosages reported for a particular drug matched in unit. For the trials using cisplatin, fluorouracil, lecovorin or levoleucovorin and reporting dosages in unit mg , we converted to mg/m^2 by dividing by 2, a typical body surface area. For trials using cytarabine or fluorouracil and reporting dosages in unit mg/kg , we converted to mg/m^2 by multiplying by 82 and dividing by 2.

The following table contains the survival coefficient ($\hat{\beta}_{OS}$) and toxicity coefficient ($\hat{\beta}_{DLT}$) for each of the non-drug variables in the ridge regression models trained using the entire database.

Variable	Unit	$\hat{\beta}_{OS}$	$\hat{\beta}_{DLT}$
Male	Proportion	0.2906	0.0185
Prior palliative chemotherapy	Proportion	-2.1137	-0.0197
Median age	Year	-0.0003	-0.0002
Mean performance status	Performance Status	-1.1918	-0.0353
Primary tumor in stomach	Proportion	-0.6780	-0.0378
Primary tumor in GEJ	Proportion	-0.2066	0.1427
Authors from USA	Proportion	-0.3970	0.0769
Authors from Germany	Proportion	0.6626	-0.0151
Authors from UK	Proportion	0.4848	0.0136
Authors from Japan	Proportion	0.8799	0.0079
Authors from South Korea	Proportion	0.1193	0.0233
Authors from France	Proportion	0.4466	-0.0063
Authors from Italy	Proportion	0.7057	-0.0217
Authors from Spain	Proportion	-0.0671	0.0305
Authors from Taiwan	Proportion	-0.2651	0.0438
Authors from China	Proportion	0.5208	-0.0709
Authors from Netherlands	Proportion	0.5004	-0.0395
Authors from Asia	Proportion	1.1485	0.0080
Trial size	Patients	-0.0023	0.0002
Publication year	Year	0.0677	0.0012

The intercept term for the model predicting median OS is 6.038 months, and the intercept term for the model predicting DLT is 0.218.