Stemina
BIOMARKER DISCOVERY

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Column Header Definitions

Header	Description/Notes
Compound	Common Compound Name.
"Truth" Classification	Classification was based on human data when available. When human data is not available, data from rodent *in vivo* studies was used to classify the compounds as developmentally toxic or non-developmentally toxic. This methodology for determining teratogenicity results in higher accuracy, sensitivity and specificity in this group of compounds for the rodent model. If a compound has multiple classifications (NON | DT), classification is based on the negative and positive exposure levels from Daston et al. (2014).
FDA Pregnancy Category	FDA category to indicate the potential of a drug to cause birth defects if used during pregnancy.
Humans	Published developmental toxicity potential in humans.
Rodent	Published developmental toxicity potential in rodents.
Rabbit	Published developmental toxicity potential in rabbits.
ZET	Published developmental toxicity prediction in zebrafish embryotoxicity test (ZET).
mEST	Published developmental toxicity prediction in mouse embryonic stem cell test (mEST). May include predictions generated with modified versions of the ECVAM-validated mEST, see noted reference for more information.
rWEC	Published developmental toxicity prediction in the rat post-implantation whole embryo culture test (rWEC).
EPA T.E.S.T.	Predicted value from EPA's Toxicity Estimation Software Tool (QSAR Model based on CEASAR developmental toxicity model [Cassano et al., 2010]). Values > 0.5 are predicted as DT; Values ≤ 0.5 are predicted as NON.
hESC devTOX *quick* Predict Classification **iPSC devTOX *quick* Predict Classification**	2 models for prediction depending on available information (See Figure). • Human Data or Effect Exposure Available: Prediction based on comparison of calculated dTP to human therapeutic C_{max} or concentration from Daston et al., 2014. • No Information on Human Developmental Toxicity or Effect Exposure: Prediction based on concentration threshold of 65 µM.
Human Therapeutic C_{max} (µM)	Published human therapeutic total C_{max}
Negative Exposure (µM) **Positive Exposure (µM)**	Exposure Level published in Daston et al., 2014
Prediction Model	Prediction model applied for hESC and iPSC devTOX *quick* Predict Classification.
Species Used for "Truth Classification"	Species used for classification listed in "Truth" Classification column.

Footnotes & Definitions

DT = *In vivo* studies: chemical exposure resulted in developmental toxicity, including, but not limited to, teratogenicity, embryotoxicity, skeletal variations, growth restriction, etc.
In vitro studies: chemical is predicted to have developmental toxicity potentail based on prediction model used in reference.
DT-E = Main effect of chemical exposure is embryo lethality *in vivo.*
NON = *In vivo* studies: chemical exposure did not effect fetal development. *In vitro* studies: chemical is predicted as a negative based on prediction model used in reference.

n.d. = no data available or not tested/determined.
* = compounds have additional notes (listed after table).
[a]Maternal toxicity was present at the concentration that had an effect on the fetus.

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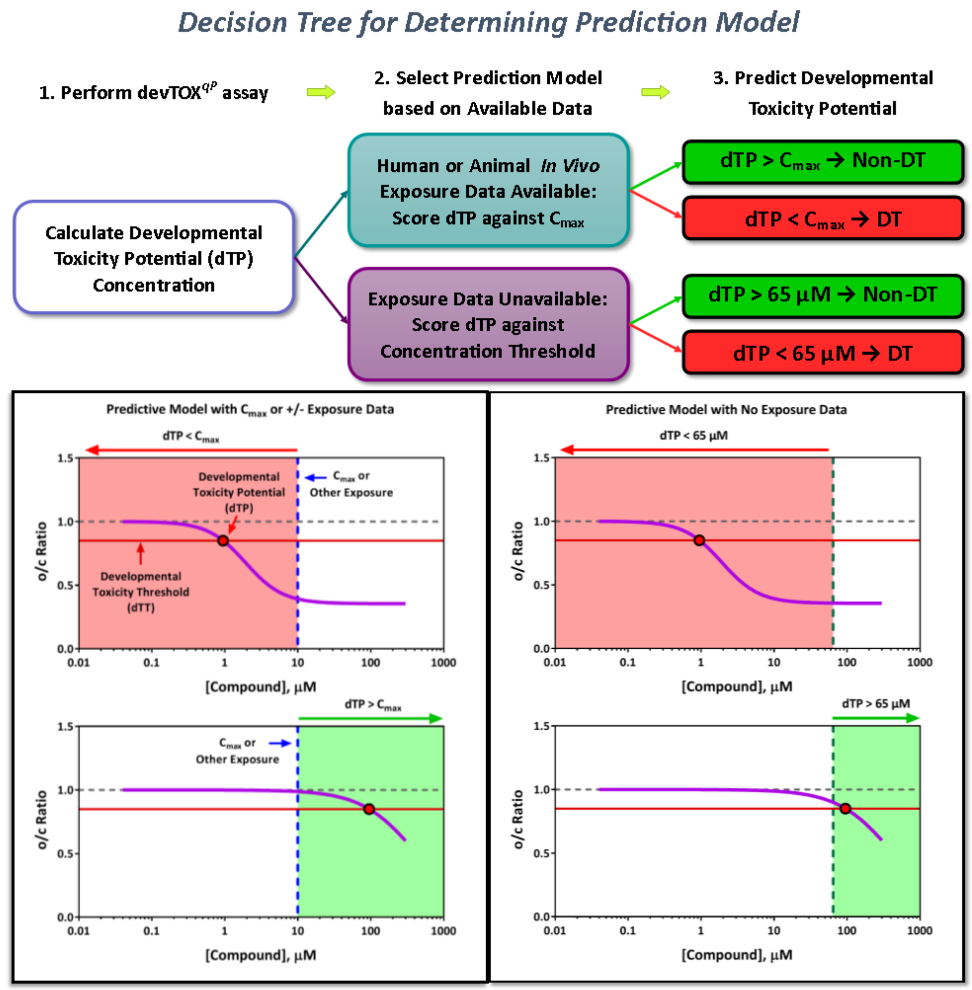
Visual explanation of prediction models

The dose–response curve for the o/c ratio (purple curve) is fit using a non-linear four-parameter log-logistic model. This curve is used to interpolate the concentration where the o/c ratio crosses the developmental toxicity threshold (red line). The black-bordered red circle represents the concentration at which there is developmental toxicity potential (dTP).

If the dTP concentration occurs in the range of concentrations within the green shaded box, the chemical was classified as a non-developmental toxicant. If the dTP concentration falls in the range of concentrations within the red shaded box, the chemical was classified as a developmental toxicant.



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Compound	"Truth" Classification	FDA Pregnancy Category	Humans	Rodent	Rabbit	ZET	mEST	rWEC	EPA T.E.S.T. (QSAR)	hESC devTOX *quick* Predict[b]	iPSC devTOX *quick* Predict[b]	Human Therapeutic C_{max} (µM)	Negative Exposure (µM) [Daston et al., 2014]	Positive Exposure (µM) [Daston et al., 2014]	Prediction Model	Species Used for "Truth Classification"
13-*cis*- Retinoic Acid	DT	X	DT (1)	DT (4)	DT (4)	DT (9)	DT (4)	DT (8)	0.79	DT	DT	2.9	N/A	N/A	Exposure (Cmax)	Human
2-Methoxyethanol*	DT	n.d.	n.d.	DT (6)	n.d.	NON (11)	NON (10)	NON (14)	0.78	n.d.	NON	N/A	N/A	N/A	N/A	Rodent
5-Fluorouracil	DT	D	DT (1)	DT (1,2,4)	DT (2,4)	DT (2)	DT (9,2,5,6)	DT (4,5)	0.71	DT	DT	4.25	N/A	N/A	Exposure (Cmax)	Human
9-*cis*- Retinoic Acid	DT	D	DT	DT (mEST ref 4)	DT (6)	DT (9)	DT (4)	n.d.	0.79	DT	DT	0.4	N/A	N/A	Exposure (Cmax)	Human
Abacavir	NON | DT	C	n.d.	DT (5)[a]	DT (5)	n.d.	n.d.	n.d.	0.68	NON	NON | DT	14.9	18	80	Exposure (Daston)	Rodent
Acebutolol	NON	B	NON (2)	NON (2)	NON (6)	NON (2,18)	NON (2)	NON (4)	0.77	n.d.	NON	2.2	N/A	N/A	Exposure (Cmax)	Human
Acetaminophen	NON	B	NON (1)	NON (2)	n.d.	NON (8)	n.d.	DT (9)	0.43	NON	NON	116.4	N/A	N/A	Exposure (Cmax)	Human
Acetazolamide	DT	C	n.d.	DT (4)	NON (4)	n.d.	n.d.	n.d.	0.85	DT	NON	81	n.d.	121	Exposure (Daston)	Rodent
Acetylcysteine	NON	B	NON (1)	NON (1)	NON (6)	NON (18)	n.d.	n.d.	0.88	n.d.	NON	15.3	N/A	N/A	Exposure (Cmax)	Human
Acitretin	DT	X	DT	DT (2)	DT (2)	n.d.	DT (4)	DT (19)	0.87	DT	DT	1.3	N/A	N/A	Exposure (Cmax)	Human
Acycloguanosine	NON	B	NON (1)	DT (2)	NON (6)	n.d.	n.d.	DT (10)	0.35	NON	NON	3	N/A	N/A	Exposure (Cmax)	Human
all-*trans*- Retinoic Acid	NON | DT	D	DT (1)	DT (3)	DT (3)	DT (2,3,8,9,14)	DT (1,4,5,6)	DT (7,8,21)	0.79	DT	DT | DT	1.2	0.0017	0.2	Exposure (Daston)	Human
Aminopterin	DT	X	DT (1)	DT (4)	DT (2)	n.d.	n.d.	n.d.	0.75	DT	DT	0.3	N/A	N/A	Exposure (Cmax)	Human
Amoxicillin	NON	B	NON (1)	NON (2)	n.d.	n.d.	n.d.	n.d.	-0.02	NON	NON	20.5	N/A	N/A	Exposure (Cmax)	Human
Artesunate*	DT	n.d.	DT	DT (5,6,19)	DT (5,6,15)	n.d.	n.d.	n.d.	0.99	n.d.	NON	73.9	n.d.	0.02	Exposure (Daston)	Rodent
Ascorbic Acid	NON	A	NON (2)	NON (2)	n.d.	NON (2,4,8)	DT (1) NON (5)	NON (4)	0.42	NON	NON	90	N/A	N/A	Exposure (Cmax)	Human
Atrazine	DT	n.d.	n.d.	DT (6)	DT (6)	NON (5,14) DT (13)	n.d.	n.d.	0.58	DT	DT	N/A	N/A	N/A	Threshold	Rodent
Bosentan	DT	X	DT	DT (1)	NON (1)	n.d.	n.d.	n.d.	0.83	DT	n.d.	2	N/A	N/A	Exposure (Cmax)	Human
Busulfan	DT	D	DT (1)	DT (2,4)	DT (6)	n.d.	DT (1,2)	DT (5)	1.18	DT	DT	49.6	N/A	N/A	Exposure (Cmax)	Human
Butylparaben	NON	n.d.	n.d.	NON (12)	n.d.	DT (14)	n.d.	n.d.	0.62	n.d.	NON	N/A	110	n.d.	Exposure (Daston)	Rodent
Caffeine	NON | DT	C	NON (1)	DT (2,4)	DT (4)	DT (3,8)	DT (5) NON (1)	DT (6)	0.91	NON	NON | NON	9.3	7.7	325	Exposure (Daston)	Human/Rodent
Camphor	NON	n.d.	NON (2)	NON (6)	NON (6)	NON (2)	NON (5,8) DT (2)	NON (4,21) DT (5)	1.16	NON	NON	N/A	N/A	N/A	Threshold	Human
Carbamazepine	DT	D	DT (1)	DT (2,5)	n.d.	DT (7)	DT (2)	DT (5)	0.76	DT	DT	47	N/A	N/A	Exposure (Cmax)	Human
Chlorophacinone	DT	n.d.	n.d.	DT (6)	DT (6)	n.d.	n.d.	n.d.	0.7	DT	DT	N/A	N/A	N/A	Threshold	Rodent
Clopyralid	NON	n.d.	n.d.	NON (6)	DT (6)	NON (5) DT (14)	n.d.	n.d.	0.24	NON	NON	N/A	N/A	N/A	Threshold	Rodent
Cyproconazole	DT	n.d.	n.d.	DT (6)[a]	DT (6)	DT (5,11)	DT (7)	DT (1)	0.7	NON	NON	N/A	N/A	N/A	Threshold	Rodent

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Cytarabine	DT	D	DT (1)	DT (4)	n.d.	DT (6)	DT (1,2)	DT (5)	0.48	DT	DT	0.6	N/A	N/A	Exposure (Cmax)	Human
D,L-3-hydroxy-3-ethyl-3-phenylpropionamide (HEPP)	DT	n.d.	n.d.	DT-E (13)	n.d.	n.d.	n.d.	n.d.	0.79	n.d.	NON	N/A	n.d.	260	Exposure (Daston)	Rodent
Dabigatran Etexilate	NON | DT	C	n.d.	DT-E (14)	DT-E (10)	n.d.	n.d.	n.d.	0.66	n.d.	NON | DT	0.3	1	7	Exposure (Daston)	Rodent
Desloratadine	NON	C	n.d.	DT-E (5)	NON (1)	n.d.	n.d.	n.d.	0.39	NON	NON	0.01	1.5	n.d.	Exposure (Daston)	Rodent
Dibutylamine	NON	n.d.	n.d.	NON (6)	n.d.	n.d.	n.d.	n.d.	0.81	NON	DT	N/A	N/A	N/A	Threshold	Rodent
Dihydroartemisinin*	DT	n.d.	n.d.	DT (19)	DT (15)	DT (20)	n.d.	DT (23)	0.81	n.d.	NON	N/A	n.d.	0.175	Exposure (Daston)	Rodent
Dimethyl Phthalate	NON	n.d.	n.d.	NON (6)	n.d.	DT (2,5) NON (14)	NON (5,8) DT (2,5,8)	DT (4,5) NON (21)	0.64	NON	NON	N/A	N/A	N/A	Threshold	Rodent
Dimethylamine	NON	n.d.	n.d.	NON (6)	n.d.	NON (15)	n.d.	NON (16)	0.68	NON	NON	N/A	N/A	N/A	Threshold	Rodent
Diniconazole	DT	n.d.	n.d.	DT (6)[a]	NON (6)	DT (5,14)	n.d.	n.d.	0.76	NON	DT	N/A	N/A	N/A	Threshold	Rodent
Dinoseb	DT	n.d.	n.d.	DT (6)	DT (6)	DT (14)	DT (3)	n.d.	0.83	NON	NON	N/A	N/A	N/A	Threshold	Rodent
Diphenhydramine	NON	B	NON (1)	NON (4) DT (9)	NON (4)	DT (8)	DT (1,5,9)	NON (4,21)	0.24	NON	NON	0.25	N/A	N/A	Exposure (Cmax)	Human
Diquat Dibromide	DT	n.d.	n.d.	DT (6)	DT (6)	DT (5) NON (14)	n.d.	n.d.	n.d.	DT	DT	N/A	N/A	N/A	Threshold	Rodent
Doxylamine	NON	B	NON (1)	NON (4)	NON (4)	n.d.	DT (3)	NON (4)	0.14	NON	NON	0.38	N/A	N/A	Exposure (Cmax)	Human
D-Penicillamine	DT	D	DT (1)	DT (4)	n.d.	NON (4)	NON (3)	NON (4)	1.16	NON	NON	13.4	N/A	N/A	Exposure (Cmax)	Human
Endosulfan	DT	n.d.	n.d.	DT (6)	NON (6)	DT (5,14)	n.d.	n.d.	0.67	DT	DT	N/A	N/A	N/A	Threshold	Rodent
Epoxiconazole	DT	n.d.	n.d.	DT (10)[a]	DT (9)[a]	n.d.	DT (10)	n.d.	0.43	n.d.	DT	N/A	N/A	N/A	Threshold	Rodent
Ethylene Glycol	NON | DT	n.d.	n.d.	DT (5,6)	NON (6)	DT (14)	n.d.	DT (3,15)	0.27	n.d.	NON | DT	N/A	1,400	57,000	Exposure (Daston)	Rodent
Etretinate	DT	X	DT	DT (2)	DT (2)	n.d.	DT (4)	DT (19)	0.71	DT	DT	1.1	N/A	N/A	Exposure (Cmax)	Human
Everolimus	DT	D	DT	DT (1)[a]	DT (1)[a]	n.d.	n.d.	n.d.	0.3	DT	n.d.	0.02	N/A	N/A	Exposure (Cmax)	Human
Fingolimod	DT	C	n.d.	DT (15)	DT (11)	n.d.	n.d.	n.d.	0.72	n.d.	NON	0.01	n.d.	0.067	Exposure (Daston)	Rodent
Fipronil	NON	n.d.	n.d.	NON (6)	NON (6)	DT (5,14)	n.d.	n.d.	N/A	DT	DT	N/A	N/A	N/A	Threshold	Rodent
Fluazinam	DT	n.d.	n.d.	DT (6)	DT (6)	DT (5,14)	n.d.	n.d.	1.07	DT	DT	N/A	N/A	N/A	Threshold	Rodent
Flusilazole	DT	n.d.	n.d.	DT (6)	DT (6)[a]	DT (5,11,14)	DT (7)	DT (1)	0.22	DT	DT	N/A	N/A	N/A	Threshold	Rodent
Folic Acid	NON	A	NON (2)	NON (8)	n.d.	n.d.	n.d.	NON (2)	0.83	NON	NON	0.035	N/A	N/A	Exposure (Cmax)	Human
Genistein	DT	n.d.	n.d.	DT (6)	n.d.	DT (14)	DT (11)	DT (17)	0.76	DT	DT	N/A	N/A	N/A	Threshold	Rodent
Glycerol	NON	n.d.	n.d.	NON (6)	NON (6)	DT (14)	n.d.	NON	0.27	NON	NON	N/A	N/A	N/A	Threshold	Rodent

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Glycolic Acid	NON | DT	n.d.	n.d.	DT (6)	n.d.	n.d.	n.d.	DT (15)	0.54	n.d.	NON | DT	N/A	275	5,000	Exposure (Daston)	Rodent
Hexaconazole	DT	n.d.	n.d.	DT (6)	DT (6)[a]	DT (5,11,14)	DT (7)	DT (1)	0.46	DT	DT	N/A	N/A	N/A	Threshold	Rodent
Hexazinone	NON	n.d.	n.d.	NON (6)	NON (6)	NON (5) DT (14)	n.d.	n.d.	1.15	NON	NON	N/A	N/A	N/A	Threshold	Rodent
Hydroxyurea	DT	D	DT (1)	DT (3,4)	DT (3,4)	DT (2)	DT (2,5,9)	DT (4,5,21)	0.5	DT	DT	565	n.d.	350	Exposure (Daston)	Human
Imazamox	NON	n.d.	n.d.	NON (6)	NON (6)	NON (5,14)	n.d.	n.d.	1.06	NON	NON	N/A	N/A	N/A	Threshold	Rodent
Imazapyr	NON	n.d.	n.d.	NON (6)	NON (6)	NON (5) DT (14)	n.d.	n.d.	0.91	NON	NON	N/A	N/A	N/A	Threshold	Rodent
Isoniazid	NON	C	NON (1)	NON (3,4)	NON (3,4)	NON (2,6) DT (8,14)	NON (1,2,5)	DT (4,5)	0.62	NON	NON	51	N/A	N/A	Exposure (Cmax)	Human
Ketoconazole	DT	C	n.d.	DT (2)	DT (2)[a]	n.d.	DT (10)	n.d.	0.36	n.d.	DT	7.9	N/A	N/A	Threshold	Rodent
Lapatinib*	DT	D	DT	DT (1)	DT (1)	n.d.	n.d.	n.d.	0.69	NON	n.d.	4.2	N/A	N/A	Exposure (Cmax)	Human
Levothyroxine	NON	A	NON (1)	NON (6)	NON (6)	n.d.	n.d.	n.d.	1.02	NON	NON	0.14	N/A	N/A	Exposure (Cmax)	Human
Loratadine	NON	B	NON	NON (6)	NON (6)	DT (4)	NON (2)	NON (4,5)	0.6	NON	n.d.	0.03	N/A	N/A	Exposure (Cmax)	Human
Lovastatin*	DT	X	DT	DT (1)	NON (1)	DT (4,14)	DT (3)	n.d.	0.78	NON	NON	0.02	N/A	N/A	Exposure (Maternal Cmax)	Rodent
Methanol	NON | DT	n.d.	n.d.	DT (6)	NON (8)	n.d.	n.d.	DT (4)	0.45	n.d.	NON | DT	N/A	22	270,000	Exposure (Daston)	Rodent
Methotrexate	DT	X	DT (1)	DT (4)	DT (4)	DT (4,14) NON (8)	DT (1,2,5)	DT (4,21)	0.95	DT	DT	0.2	N/A	N/A	Exposure (Cmax)	Human
Methoxyacetic Acid	DT	n.d.	n.d.	DT (6)	n.d.	DT (11)	DT (5,8,9,10)	DT (6,21)	0.83	n.d.	DT	N/A	n.d.	5,000	Exposure (Daston)	Rodent
Methylmercury	DT	n.d.	n.d.	DT (2)	DT (2)	DT (8)	DT (5)	DT (21)	0.47	n.d.	DT	N/A	n.d.	5	Exposure (Daston)	Rodent
Metoclopramide	NON	B	NON (1)	NON (2)	NON (2)	NON (4)	DT (2,3)	NON (4,5)	0.64	NON	NON	0.15	N/A	N/A	Exposure (Cmax)	Human
Mono(2-ethylhexyl) Phthalate*	NON | DT	n.d.	n.d.	DT (16)	NON (12)	DT (14)	DT (13)	DT (20)	0.78	n.d.	NON | DT	N/A	1	146	Exposure (Daston)	Rodent
Myclobutanil	DT	n.d.	n.d.	DT (6)	DT (6)	DT (1)	DT (7)	DT (1)	0.53	n.d.	DT	N/A	N/A	N/A	Threshold	Rodent
Nilotinib	NON | DT	D	DT	DT (17)	DT-E (13)	n.d.	n.d.	n.d.	0.82	n.d.	NON | DT	3.1	2	28	Exposure (Daston)	Human/Rodent
Novaluron	NON	n.d.	n.d.	NON (6)	NON (6)	NON (5) DT (14)	n.d.	n.d.	1.07	NON	NON	N/A	N/A	N/A	Threshold	Rodent
***o,p'*-DDT**	DT	n.d.	n.d.	DT (6)	n.d.	NON (14)	n.d.	n.d.	0.48	DT	DT	N/A	N/A	N/A	Threshold	Rodent
Ochratoxin A	DT	n.d.	n.d.	DT (6)	DT (6)	DT (16)	DT (3)	DT (14)	0.86	DT	DT	N/A	N/A	N/A	Threshold	Rodent
***o*-Phenylphenol**	NON	n.d.	n.d.	NON (6)	NON (6)	DT (14)	n.d.	n.d.	0.76	NON	NON	N/A	N/A	N/A	Threshold	Rodent
Oseltamivir	NON	C	n.d.	NON (2)	DT-E (2)[a]	n.d.	n.d.	n.d.	0.7	n.d.	NON	0.21	12	n.d.	Exposure (Daston)	Rodent
Penicillin G	NON	B	NON (1)	NON (3)	NON (3,4)	NON (2,6,8)	NON (1,2,5,6,9)	NON (4,5,21)	-0.01	NON	NON	134.6	N/A	N/A	Exposure (Cmax)	Human

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Phenytoin	DT	D	DT (1)	DT (4)	DT (4)	NON (6)	DT (1,2,5,6)	DT (4,5)	0.9	DT	NON	79.3	N/A	N/A	Exposure (Cmax)	Human
Propiconazole	DT	n.d.	n.d.	DT (6)	DT (6)[a]	DT (5,14)	DT (12)	n.d.	0.28	NON	DT	N/A	N/A	N/A	Threshold	Rodent
Propylene Glycol	NON	n.d.	n.d.	NON (6)	NON (6)	DT (14)	n.d.	n.d.	0.52	NON	DT	N/A	850,000	n.d.	Exposure (Daston)	Rodent
Pyridaben	DT	n.d.	n.d.	DT (6)	NON (6)	DT (5,14)	n.d.	n.d.	0.18	DT	DT	N/A	N/A	N/A	Threshold	Rodent
Pyriproxyfen	NON	n.d.	n.d.	NON (6)	NON (6)	DT (5, 19), NON (14)	n.d.	n.d.	0.45	n.d.	NON	N/A	N/A	N/A	Threshold	Rodent
Ramelteon	NON | DT	C	n.d.	DT (1)[a]	NON (1)	n.d.	n.d.	n.d.	0.6	n.d.	NON | DT	0.02	0.019	81	Exposure (Daston)	Rodent
Resveratrol	NON	n.d.	n.d.	NON (6)	n.d.	NON (17)	n.d.	n.d.	0.38	DT	NON	N/A	N/A	N/A	Threshold	Rodent
Retinol*	NON	A/C/X	NON (1)	DT (3)	DT (3)	DT (2,6,14)	DT (4)	DT (7)	0.84	NON	NON	2.4	N/A	N/A	Exposure (Cmax)	Human
Rotenone	DT	n.d.	n.d.	DT (6)	n.d.	DT (5,12,14)	n.d.	n.d.	0.84	DT	DT	N/A	N/A	N/A	Threshold	Rodent
Saccharin	NON	A	NON (1)	NON (3,4)	NON (3,4)	NON (2,3,8)	NON (1,2,5,9)	DT (4) NON (5,21)	0.45	NON	NON	1.4	24	n.d.	Exposure (Daston)	Human
Salicylic Acid	DT	C	n.d.	DT (6)	n.d.	n.d.	DT (5)	DT (12,21)	0.24	n.d.	DT	33.3	n.d.	3,000	Exposure (Daston)	Rodent
SB-209670	NON | DT	n.d.	n.d.	DT (18)	DT (14)	n.d.	n.d.	n.d.	0.93	n.d.	n.d.	N/A	4	500	Exposure (Daston)	Rodent
Sitagliptin*	NON	B	NON	DT (6)	NON (6)	n.d.	n.d.	n.d.	0.89	NON	n.d.	0.95	N/A	N/A	Exposure (Cmax)	Human
Sorbitol	NON	n.d.	n.d.	NON (6)	n.d.	n.d.	n.d.	n.d.	0.14	DT	NON	3.9	N/A	N/A	Exposure (Cmax)	Human
Sotalol	NON	B	NON (2)	NON (2)	NON (2)	NON (18)	n.d.	n.d.	1.01	n.d.	NON	4.5	N/A	N/A	Exposure (Cmax)	Human
Spiroxamine	DT	n.d.	n.d.	DT (6)	DT (6)	DT (5) NON (14)	n.d.	n.d.	0.15	DT	NON	N/A	N/A	N/A	Threshold	Rodent
Sucrose	NON	n.d.	NON	NON (6)	n.d.	NON (18)	n.d.	n.d.	0.44	n.d.	NON	N/A	N/A	N/A	Threshold	Human
Tapentadol	NON	C	n.d.	NON (1)	DT (1)	n.d.	n.d.	n.d.	0.71	n.d.	NON	0.6	1,000	n.d.	Exposure (Daston)	Rodent
Tetrabromobisphenol A	NON	n.d.	n.d.	NON (6)	n.d.	DT (14)	n.d.	n.d.	N/A	NON	NON	N/A	N/A	N/A	Threshold	Rodent
Thalidomide	DT	X	DT (1)	NON (4)	DT (4)	DT (4,14)	n.d.	DT (4)	1.04	DT	DT	12.4	N/A	N/A	Exposure (Cmax)	Human
Thiacloprid	DT	n.d.	n.d.	DT (6)	DT (6)	NON (5) DT (14)	n.d.	n.d.	0.15	NON	NON	N/A	N/A	N/A	Threshold	Rodent
Thiamine	NON	A	NON (1)	NON (6)	n.d.	n.d.	n.d.	n.d.	0.75	NON	NON	0.67	N/A	N/A	Exposure (Cmax)	Human
ThioTEPA	DT	D	DT	DT (6)	DT (1)	DT (10)	n.d.	n.d.	0.79	DT	n.d.	7	N/A	N/A	Exposure (Cmax)	Human
Thiram	DT	n.d.	n.d.	DT (6)	DT (6)	DT (5,14)	n.d.	n.d.	0.77	DT	DT	N/A	N/A	N/A	Threshold	Rodent
Triadimefon	DT	n.d.	n.d.	DT (6)	DT (6)	DT (1)	DT (7)	DT (1)	0.34	n.d.	DT	N/A	N/A	N/A	Threshold	Rodent
Triclopyr	NON	n.d.	n.d.	NON (6)	NON (6)	DT (5) NON (14)	n.d.	n.d.	0.64	NON	NON	N/A	N/A	N/A	Threshold	Rodent

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Compound	"Truth" Classification	FDA Pregnancy Category	Humans	Rodent	Rabbit	ZET	mEST	rWEC	EPA T.E.S.T. (QSAR)	hESC devTOX *quick* Predict[b]	iPSC devTOX *quick* Predict[b]	Human Therapeutic C_{max} (µM)	Negative Exposure (µM) [Daston et al., 2014]	Positive Exposure (µM) [Daston et al., 2014]	Prediction Model	Species Used for "Truth Classification"
Triethylene Glycol	NON	n.d.	n.d.	NON (6)	NON (6)	NON (14)	n.d.	n.d.	0.27	NON	NON	N/A	N/A	N/A	Threshold	Rodent
Triticonazole*	NON	n.d.	n.d.	DT (6)[a]	DT (6)[a]	DT (1)	DT (7)	DT (1)	0.67	n.d.	DT	N/A	N/A	N/A	Threshold	Rodent
TTNPB	DT	n.d.	n.d.	DT (2)	DT (mEST ref 4)	n.d.	DT (4)	DT (19)	0.89	DT	DT	N/A	N/A	N/A	Threshold	Rodent
Valproic Acid	DT	D	DT (1)	DT (3,4)	DT (3,4)	DT (3,6,8) NON (14)	DT (2,5,6,9)	DT (4,5,21)	0.66	DT	DT	1000	n.d.	800	Exposure (Daston)	Human
Warfarin	DT	X	DT (1)	DT (2,6)	NON (4)	DT (4,14)	NON (2,3) DT (3)	DT (4) NON (5)	0.9	DT	NON	23.4	N/A	N/A	Exposure (Cmax)	Human
Zaleplon	NON	C	n.d.	NON (1)	NON (1)	n.d.	n.d.	n.d.	0.96	n.d.	NON	0.3	12	n.d.	Exposure (Daston)	Rodent
Zidovudine*	NON	C	n.d.	DT-E (1)	DT-E (1)	n.d.	n.d.	NON (22)	0.95	n.d.	DT	3.7	227	n.d.	Exposure (Daston)	Rodent
Zoxamide	NON	n.d.	n.d.	NON (6)	NON (6)	DT (5,14)	n.d.	n.d.	0.68	DT	DT	N/A	N/A	N/A	Threshold	Rodent

Compound	Notes
2-Methoxyethanol	Requires metabolism to toxic metabolite, methoxyacetic acid
Artesunate	Requires metabolism to active metabolite, dihydroartemisinin
Dihydroartemisinin*	The prediction for the devTOX *quick* Predict assay was based on comparison of the dTP to the positive exposure provided in Daston et al., 2014. Predictions for the ZET and rWEC did not consider exposure level and were based on a positive effect seen in the the referenced studies.
Lapatinib	Human clinical exposure is equivalent to the approximate rodent developmental toxicity NOEL
Lovastatin	Developmental toxicity observed in rodents at doses >40X human dose
Mono(2-ethylhexyl) Phthalate	MEHP is the toxic metabolite of Di(2-ethylhexyl) Phthalate (DEHP)
Retinol	Pregnancy Category: A (oral); C (doses exceeding RDA); X (>6,000 units/day administered parenterally); Classifed as NON based on normal human exposure.
Sitagliptin	Develomental toxicity observed in rodents at doses 100X maximum human recommended daily dose.
Triticonazole	Rat dLEL is 1000 mg/kg/day and chemical is typically considered to be a non-developmental toxicant as maternal toxicity was also observed at this high exposure.
Zidovudine	No teratogenicity observed during EFD studies, embryolethality observed during reproductive toxicity studies. Compound is classified as a NON to be consistent with Daston et al., 2014 publication.

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Species/ Assay	Reference #	Authors	Title	Year	Journal	Volume	Pages
N/A	N/A	Daston et al.	Exposure-based validation list for developmental toxicity screening assays.	2014	Birth Defects Res B Dev Reprod Toxicol	101(6)	423-428
Humans Rodent Rabbit	1 1 1	Briggs et al.	Drugs in Pregnancy and Lactation, Ninth Edition	2011	N/A	N/A	N/A
Humans Rodent Rabbit	2 2 2	N/A	Teratogen Information System (TERIS). Available at: https://apps.uwmedicine.org/Teris/Teris1a.aspx?ReturnUrl=%2fteris%2fdefault.aspx	N/A	N/A	N/A	N/A
Rodent Rabbit ZET	3 3 2	Brannen et al.	Development of a zebrafish embryo teratogenicity assay and quantitative prediction model.	2010	Birth Defects Res B Dev Reprod Toxicol	89(1)	66-77
Rodent Rabbit	4 4	Jelovsek et al.	Prediction of risk for human developmental toxicity: How important are animal studies for hazard identification?	1989	Obstet Gynecol	74(4)	624-636
Rodent Rabbit	5 5	N/A	Data provided as part of DART WORKSHOP ON CONSENSUS LIST OF DEVELOPMENTAL TOXICANTS. May 17-18, 2011 Washington, D.C.	2011	N/A	N/A	N/A
Rodent Rabbit rWEC	6 6 3	N/A	ACToR. Available at: https://actor.epa.gov Hazardous Substances Data Bank (HSDB). A ToxNet Database. Available at: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm	N/A	N/A	N/A	N/A
Rodent	8	Hansen et al.	Effect of dietary supplementation with folic acid on valproate-induced neural tube defects.	1993	Teratology	47(5)	420
Rabbit	8	Sweeting et al.	Species- and strain-dependent teratogenicity of methanol in rabbits and mice.	2011	Reprod Toxicol	31(1)	50-58
Rodent	9	Bailey et al.	The future of teratology research is in vitro.	2005	Biogenic Amines	19(2)	97-145
Rodent Rabbit	10 9	ECHA	Background document to the opinion of the committee for risk assessment on a proposal for harmonised classification and labelling of epoxiconazole.	2010	N/A	N/A	N/A
Rodent	12	Daston et al.	Developmental toxicity evaluation of butylparaben in Sprague-Dawley rats.	2004	Birth Defects Res B Dev Reprod Toxicol	71(4)	296-302
Rodent	13	Gomez-Martinez	Gestational age dependency in the prenatal toxicity and in the disposition kinetics of the novel anticonvulsant HEPP (D,L-3-hydroxy-3-ethyl-3-phenylpropionamide) after subcutaneous administration in pregnant rats.	2007	Int J Toxicol	26(3)	237-246
Rodent Rabbit	14 10	FDA	Pradaza pharmacology review. Available at: http://www.accessdata.fda.gov/drugsatfda docs/nda/2010/022512Orig1s000TOC.cfm.	2010	N/A	N/A	N/A
Rodent Rabbit	15 11	FDA	Gilenya pharmacology review. Available at: http://www.accessdata.fda.gov/drugsatfdadocs/nda/2010/022527Orig1s000TOC.cfm.	2010	N/A	N/A	N/A
Rodent Rabbit	16 12	Kavlock et al.	NTP Center for the Evaluation of Risks to Human Reproduction: phthalates expert panel report on the reproductive and developmental toxicity of di(2-ethylhexyl) phthalate.	2002	Reprod Toxicol	16	529-653
Rodent Rabbit	17 13	FDA	Tasigna (nilotinib) Pharmacology Review. Available at: http://www.accessdata.fda.gov/drugsatfda_docs/nda/2007/022068TOC.cfm	2007	N/A	N/A	N/A
Rodent Rabbit	18 14	Treinen et al.	Developmental toxicity and toxicokinetics of two endothelin receptor antagonists in rats and rabbits.	1999	Teratology	59(1)	51-59
Rodent Rabbit	19 15	Clark et al.	Developmental toxicity of artesunate and an artesunate combination in the rat and rabbit.	2004	Birth Defects Res B Dev Reprod Toxicol	71(6)	380-394

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Species/ Assay	Reference #	Authors	Title	Year	Journal	Volume	Pages
ZET mEST rWEC	1 7 1	Jong et al.	Comparison of the mouse Embryonic Stem cell Test, the rat Whole Embryo Culture and the Zebrafish Embryotoxicity Test as alternative methods for developmental toxicity testing of six 1,2,4-triazoles.	2011	Toxicol Appl Pharmacol	253	103-111
ZET	3	Selderslaghs et al.	Development of a screening assay to identify teratogenic and embryotoxic chemicals using the zebrafish embryo.	2009	Reprod Toxicol	28(3)	308-320
ZET	4	Gustafson et al.	Inter-laboratory assessment of a harmonized zebrafish developmental toxicology assay - progress report on phase I.	2012	Reprod Toxicol	33(2)	155-164
ZET	5	Padilla et al.	Zebrafish developmental screening of the ToxCast™ Phase I chemical library.	2012	Reprod Toxicol	33(2)	174-187
ZET	6	McGrath et al.	Zebrafish: a predictive model for assessing drug-induced toxicity.	2008	Drug Discov Today	13(9-10)	394-401
ZET	7	Madureira et al.	The toxicity potential of pharmaceuticals found in the Douro River estuary (Portugal)--experimental assessment using a zebrafish embryo test.	2011	Environ Toxicol Pharmacol	32(2)	212-217
ZET	8	Selderslaghs et al.	Feasibility study of the zebrafish assay as an alternative method to screen for developmental toxicity and embryotoxicity using a training set of 27 compounds.	2012	Reprod Toxicol	33	142-154
ZET	9	Herrmann	Teratogenic effects of retinoic acid and related substances on the early development of the zebrafish (Brachydanio rerio) as assessed by a novel scoring system.	1995	Toxicol In Vitro	9(3)	267-283
ZET	10	Weigt et al.	Zebrafish (Danio rerio) embryos as a model for testing proteratogens.	2011	Toxicology	281 (1-3)	25-36
ZET	11	Hermsen et al.	Relative embryotoxicity of two classes of chemicals in a modified zebrafish embryotoxicity test and comparison with their in vivo potencies.	2011	Toxicol In Vitro	25 (3)	745-53
ZET rWEC	12 14	N/A	http://ecvam-dbalm.jrc.ec.europa.eu/	N/A	N/A	N/A	N/A
ZET	13	Wiegand et al.	Toxicokinetics of atrazine in embryos of the zebrafish (Danio rerio).	2001	Ecotoxicol Environ Saf	49 (3)	199-205
ZET	14	Truong et al.	Multidimensional in vivo hazard assessment using zebrafish. (Positive based on if LEL was given in Supplementary Table 1)	2014	Toxicol Sci	137 (1)	212-33
ZET	15	Groth et al.	Toxicity studies in fertilized zebrafish eggs treated with N-methylamine, N,N-dimethylamine, 2-aminoethanol, isopropylamine, aniline, N-methylaniline, N,N-dimethylaniline, quinone, chloroacetaldehyde, or cyclohexanol.	1993	Bull Environ Contam Toxicol	50(6)	878-82
ZET	16	Ali et al.	Teratology in Zebrafish Embryos: A Tool for Risk Assessment	2007	MS Thesis	N/A	N/A
ZET	17	Jheng-Yu et al.	Curcumin affects development of zebrafish embryo.	2007	Biol Pharm Bull	30 (7)	1336-1339
ZET	18	Biobide	http://www.biobide.es/sites/default/files/pdf/TERATOX%20ASSAY_2016.pdf	N/A	N/A	N/A	N/A
ZET	19	Truong et al	Assessment of the developmental and neurotoxicity of the mosquito control larvicide, pyriproxyfen, using embryonic zebrafish	2016	Environ Pollut	218	1089-1093
ZET	20	Ba et al.	Dihydroartemisinin promotes angiogenesis during the early embryonic development of zebrafish.	2013	Acta Pharmacol Sin	34(8)	1101-1107

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mEST	1	Newall et al.	The stem-cell test: an in vitro assay for teratogenic potential. Results of a blind trial with 25 compounds.	1996	Toxicol In Vitro	10	229-240
mEST	2	Paquette et al.	Assessment of the Embryonic Stem Cell Test and application and use in the pharmaceutical industry.	2008	Birth Defects Res B Dev Reprod Toxicol	83	104-111
mEST	3	Marx-Stoelting et al.	A review of the implementation of the embryonic stem cell test (EST). The report and recommendations of an ECVAM/ReProTect Workshop.	2009	Altern Lab Anim	37	313-328
mEST rWEC	4 19	Louisse et al.	Relative developmental toxicity potencies of retinoids in the embryonic stem cell test compared with their relative potencies in in vivo and two other in vitro assays for developmental toxicity.	2011	Toxicol Lett	203	1-8
mEST	5	Genschow et al.	Validation of the embryonic stem cell test in the international ECVAM validation study on three in vitro embryotoxicity tests.	2004	Altern Lab Anim	32	209-244
mEST	6	zur Nieden et al.	Molecular multiple endpoint embryonic stem cell test--a possible approach to test for the teratogenic potential of compounds.	2004	Toxicol Appl Pharmacol	194	257-269
mEST	8	Suzuki et al.	Evaluation of novel high-throughput embryonic stem cell tests with new molecular markers for screening embryotoxic chemicals in vitro.	2011	Toxicol Sci	124 (2)	460-471
mEST	9	Peters et al.	Evaluation of the embryotoxic potency of compounds in a newly revised high throughput embryonic stem cell test.	2008	Toxicol Sci	105 (2)	342-350
mEST	10	Verwei et al.	Prediction of in vivo embryotoxic effect levels with a combination of in vitro studies and PBPK modelling.	2006	Toxicol Lett	165 (1)	79-87
mEST	11	Kong et al.	Individual and combined developmental toxicity assessment of bisphenol A and genistein using the embryonic stem cell test in vitro.	2013	Food Chem Toxicol	60	497-505
mEST	12	Dreisig et al.	Predictive value of cell assays for developmental toxicity and embryotoxicity of conazole fungicides.	2013	ALTEX	30	319-330
mEST	13	Schulpen et al.	Dose response analysis of monophthalates in the murine embryonic stem cell test assessed by cardiomyocyte differentiation and gene expression.	2013	Reprod Toxicol	35	81-88

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rWEC	2	Hansen	Folates in reproduction: in vitro studies.	1995	Teratology	51(6)	12A
rWEC	4	Zhang et al.	Development of a streamlined rat whole embryo culture assay for classifying teratogenic potential of pharmaceutical compounds.	2012	Toxicol Sci	127(2)	535-546
rWEC	5	Thomson et al.	Not a walk in the park: the ECVAM whole embryo culture model challenged with pharmaceuticals and attempted improvements with random forest design.	2011	Birth Defects Res B Dev Reprod Toxicol	92	111-121
rWEC	6	Robinson et al.	Embryotoxicant-specific transcriptomic responses in rat postimplantation whole-embryo culture.	2010	Toxicological Sciences	118(2)	675-685
rWEC	7	Ritchie et al.	Effect of co-administration of retinoids on rat embryo development in vitro.	2003	Birth Defects Res A Clin Mol Teratol	67(6)	444-451
rWEC	8	Klug et al.	Influence of 13-cis and all-trans retinoic acid on rat embryonic development in vitro: correlation with isomerisation and drug transfer to the embryo.	1989	Arch Toxicol	63(3)	185-192
rWEC	9	Stark et al.	Dysmorphogenesis elicited by microinjected acetaminophen analogs and metabolites in rat embryos cultured in vitro.	1990	J Pharmacol Exp Ther	255(1)	74-82
rWEC	10	Klug et al.	Effect of acyclovir on mammalian embryonic development in culture.	1985	Arch Toxicol	58(2)	89-96
rWEC	12	McGarrity et al.	The effect of sodium salicylate on the rat embryo in culture: an in vitro model for the morphological assessment of teratogenicity.	1981	J Anat	133(Pt. 2)	257-269
rWEC	15	Klug et al.	Effects of ethylene glycol and metabolites on in vitro development of rat embryos during organogenesis.	2001	Toxicol In Vitro	15(6)	635-42
rWEC	16	Guesta & Varmab	Developmental toxicity of methylamines in mice.	1991	J Toxicol Environ Health	32	319-330
rWEC	17	McClain et al.	Reproductive safety studies with genistein in rats.	2007	Food Chem Toxicol	45(8)	1319-32
rWEC	20	Robinson et al.	Dose-response analysis of phthalate effects on gene expression in rat whole embryo culture.	2012	Toxicol Appl Pharmacol	264	32-41
rWEC	21	Piersma et al.	Validation of the postimplantation rat whole-embryo culture test in the international ECVAM validation study on three in vitro embryotoxicity tests.	2004	Altern Lab Anim	32	275-307
rWEC	22	Fujinaga et al.	Assessment of developmental toxicity of antiretroviral drugs using a rat whole embryo culture system.	2000	Teratology	62(2)	108-114
rWEC	23	Longo et al.	In vivo and in vitro investigations of the effects of the antimalarial drug dihydroartemisinin (DHA) on rat embryos.	2006	Reprod Toxicol	22(4)	797-810
EPA T.E.S.T. (QSAR)		Cassano et al..	CAESAR models for developmental toxicity.	2010	Chem Cent J	4 (Suppl 1)	54