	Test/Study	Specification	Method	Turnover time (week)
1. Genotoxicity				
1.1	Gene Mutation in Bacteria*	Two experiments	OECD 471, CPMP/ICH/174/95	10
1.2	Mammalian Chromosome Aberration: In-vitro	Human lymphocytes, two experiments	OECD 473, CPMP/ICH/174/95	25
1.3	Erythrocyte Micronucleus: In-vivo	Mouse micronucleus, three dose levels	OECD 474, CPMP/ICH/174/95	15
1.4	Erythrocyte Micronucleus: In-vitro	Human lymphocytes, three dose levels	Draft OECD 479, CPMP/ICH/174/95	15
1.5.	Cytotoxicity: In-vitro	Human lymphocytes	ISO 10993-5	6 - 8
1.6.	Mammalian gene mutation test in vitro (Mous Lymphoma Assay)	L5178Y/TK$^{+/-}$ mouse lymphoma cells	OECD 476, CPMP/ICH/174/95	6 - 8
2. Sensitization, Irritation				
2.1	Skin Irritation/Corrosion: In-vivo	Observations at 24h, 48h, 72h	OECD 404	6
2.2	Skin Irritation/Corrosion: In-vivo	Observations at 24h, 48h, 72h, 7d & 14d	OECD 404	8
2.3	Skin Sensitization: Local Lymph Node Assay*	Individual nodes	OECD 429	8
2.4	Skin Sensitization Local Lymph Node Assay*	Reduced LLNA	OECD 429	7
2.5	Skin sensitization in-vivo	Magnusson, Buehler method	OECD 406	10
2.6	Eye Irritation/ Corrosion In-vivo	Observations at 24h, 48h, 72h	OECD 405	6
2.7	Eye Irritation/ Corrosion: In-vivo	Observations at 24h, 48h, 72h, 7d, 14d & 21d	OECD 405	8
2.8	Skin Corrosion*	in-vitro (HumanSkinModel)	OECD 431	8
2.9	Skin Irritation : In-vitro*	EpiSkin, EpiDerm	OECD draft	8
3. Acute (Single Dose) Toxicity				
3.1	Acute Toxicity (p.o, i.v., i.m., s.c.,i.p., dermal), rodents	Full study	OECD 420, 423, 425, 402, EU B.1.tris, , EU B.1bis, EU B.3, OPTTS 870-1200, EMA/CHMP/SWP/81714 /2010	8 - 10
		Limit Test		8
3.2	Acute injection toxicity/pathogenicity, rodents	Full study	OPTTS 885.3200	8 - 10
3.3	Acute pulmonary toxicity/pathogenicity, ferrets	Full study	OPTTS 885.3150	8 - 10
3.4	Acute oral toxicity/pathogenicity, rodents	Full study	OPTTS 885.3300	8 - 12
3.5	Maximum tolerated dose, rodents	Full study (3 - 5 dose levels), clinical and clinical-laboratory observation, gross pathology	CHMP/SWP/302413/08	8 - 12
3.6	Extended single dose toxicity study, rodents	Full study, clinical and clinical-laboratory observation, gross and histopathology	CPMP/ICH/286/95, M3 (R2)	8 - 12
3.7	Maximum tolerated dose, non-rodents (rabbits, ferrets, dogs, non-human primates)	Full study (3 - 5 escalated dose levels), clinical and clinical-laboratory observation, gross pathology	CHMP/SWP/302413/08	8 - 12

5. Repeated Dose Toxicity

5.1	Dose range finding study (p.o, i.v., i.m., s.c.,i.p., dermal), rodents	2 weeks of administration, 7d/wk exposure, clinical and clinical-laboratory examination, gross pathology, optional histopathology of selected organs	CPMP/SWP/1041/99, OPTTS 870-3050,	8 - 12
5.2	Dose range finding study (p.o, i.v., i.m., s.c.,i.p.), non-rodents, (rabbits, ferrets, dogs, non-human primates)	2 weeks of administration, 7d/wk exposure, clinical and clinical-laboratory examination, gross pathology, optional histopathology of selected organs	CPMP/SWP/1041/99, OPTTS 870-3050,	8 - 12
5.3	14-21 days repeated dose toxicity study (p.o, i.v., i.m., s.c.,i.p., dermal), rodents	2 - 3 weeks of administration, 7d/wk exposure, clinical and clinical-laboratory examination, gross pathology, full set of histopathology	CPMP/SWP/1041/99, OECD 407, EU B.7, OPTTS 870-3050,	10 - 16
5.4	14-21 days repeated dose toxicity study (p.o, i.v., i.m., s.c.,i.p.), non-rodents, (rabbits, ferrets, dogs, non-human primates)	2 - 3 weeks of administration, 7d/wk exposure, clinical and clinical-laboratory examination, gross pathology, full set of histopathology	CPMP/SWP/1041/99, OECD 407, EU B.7, OPTTS 870-3050,	10 - 16
5.5	28-day repeated dose toxicity study (p.o, i.v., i.m., s.c.,i.p., dermal), rodents	7d/wk exposure, clinical and clinical-laboratory examination, functional observation battery, gross pathology, full set of histopathology	OECD 407, 410, EU B.7. OPTTS 870-3050	18 - 22
		Recovery: 2 weeks		additional 2 - 3 weeks
5.6	28-day repeated dose toxicity study (p.o, i.v., i.m., s.c.,i.p., dermal), non-rodents (rabbits, ferrets, dogs, non-human primates)	7d/wk exposure, clinical and clinical-laboratory examination, functional observation battery, gross pathology, full set of histopathology	OECD 407, EU B.7. OPTTS 870-3050	18 - 22
		Recovery: 2 weeks		additional 2 - 3 weeks
5.7	90-day repeated dose toxicity study (p.o., i.p., i.v., i.m., s.c., dermal), rodents	7d/wk exposure, clinical and clinical-laboratory examination, functional observation battery, gross pathology, full set of histopathology	OECD 408, EU B.9, CPMP/SWP/1041/99	27 - 29
		Recovery: 4 weeks		additional 4 - 5 weeks
5.8	90-day repeated dose toxicity study (p.o., i.p., i.v., i.m., s.c.), non-rodents (rabbits, ferrets, dogs, non-human primates)	7d/wk exposure, clinical and clinical-laboratory examination, functional observation battery, gross pathology, full set of histopathology	OECD 409, EU B.9, CPMP/SWP/1041/99	27 - 29
		Recovery: 4 weeks		additional 4 - 5 weeks
5.9	6-month repeated dose toxicity study, rodents	7d/wk exposure, clinical and clinical-laboratory examination, gross pathology, full set of histopathology	OECD 452, CPMP/SWP/1041/99	40 - 42
5.10	6-month repeated dose toxicity study, non-rodents (rabbits, ferrets, dogs, non-human primates)	7d/wk exposure, clinical and clinical-laboratory examination, gross pathology, full set of histopathology	OECD 452, CPMP/SWP/1041/99	40 - 42

5.11	9-month repeated dose toxicity study, non-rodents (dogs, non-human primates)	7d/wk exposure, clinical and clinical-laboratory examination, gross pathology, full set of histopathology	OECD 452, CPMP/SWP/1041/99	54 - 58
5.12	12-month repeated dose toxicity study, non-rodents (dogs, non-human primates)	7d/wk exposure, clinical and clinical-laboratory examination, gross pathology, full set of histopathology	OECD 452, CPMP/SWP/1041/99	66 - 70
5.13	Combined 28-day repeated dose & reproduction toxicity study (oral), rodents*	7d/wk exposure, GLP dose range finding, recovery groups	OECD 422	30 - 32

6. General Toxicology and Pharmacology

		Administration, blood sampling, samples preparation		depends on study design
6.1	TK/PK/BA/BEQ studies, rodents, non-rodents (non-GLP/GLP)	Implementation and validation of analytical method*	OECD 417, EU B.36, CPMP/ICH/384/95, 3BS11A	8 - 12
		Development, implementation and validation of analytical method*		10 - 14
		Sample analysis*		6 - 10
6.2	Non-clinical safety studies, rodents, non-rodents (non-GLP, GLP)		CPMP/ICH/286/95, CPMP/ICH/302/95, CPMP/SWP/2599/02	depends on study design
6.3	Non-clinical local tolerance testing of medicinal products, rodents, non-rodents (non-GLP, GLP)		CPMP/SWP/2145/00	depends on study design
6.4.	Non-clinical implantation studies, rodents, non-rodents (non-GLP, GLP)	Implantation to subcutis, muscle and bone	CPMP/SWP/2145/00	depends on study design
6.5	Immunotoxicity/Immunogenicity studies, rodents, non-rodents ((non-GLP, GLP)		CHMP/ICH/167235/04	depends on study design
6.6	Preclinical Safety Evaluation of Biotechnology-Derived Products, rodents, non-rodents (non-GLP, GLP)		CPMP/ICH/302/95	depends on study design
6.7	Safety Pharmacology Studies, rodents, non-rodents (non-GLP, GLP)	Respiratory*, central nervous* and cardiovascular system	CPMP/ICH/539/00, CPMP/ICH/423/02	depends on study design
6.8	Nonclinical evaluation for anticancer pharmaceuticals, rodents, non-rodents (non-GLP, GLP)		CHMP/ICH/646107/08	depends on study design
6.9	Non-Clinical Safety Studies for the Conduct of Human Clinical Trials for Pharmaceuticals, rodents, non-rodents (non-GLP, GLP)		CPMP/ICH/286/95	depends on study design
6.10	Preclinical pharmacological and toxicological testing of vaccines, rodents, ferrets, non-human primates (non-GLP, GLP)	Immunization, titration and challenge studies	CPMP/SWP/465/95, CVMP/IWP/52/97	depends on study design

7. Anti-tumor Effectiveness

7.11	Anti-tumor effectiveness testing in vitro (MTT)	Tumor cell lines panel		6 - 8
7.12	Anti-tumor effectiveness in vivo	Transplanted tumors (xenograft), Nu/nu mice, SCID mice		depends on study design

8. Carcinogenicity

8.1	Dose Selection for Carcinogenicity Studies of Pharmaceuticals, rodents (Non-GLP)	oral, 7d/wk exposure, administration via gavage/diet	CPMP/ICH/383/95	depends on study design
8.2	Carcinogenicity study, rodents (GLP)	oral, 7d/wk exposure, administraton via diet	OECD 451 CPMP/ICH/299/95	up to 146
8.3	Combined chronic toxicity/carninogenicity study, rodents (GLP)	oral, 7d/wk exposure, administration via diet	OECD 453 (452+451)	up to 146

9. Toxicity to Reproduction*

9.1	Prenatal developmental toxicity, rodents*	Gavage, rat, 7d/wk exposure day 6-19, GLP, dose range finding,	OECD 414, ICH 4.1.3	22 - 24
9.2	Reprotoxicity (screening), rodents*	Gavage, rat, 7d/wk exposure, GLP, dose range finding, including stability and homogeneity determination	OECD 421, ICH 4.1.3	24 - 26
9.3	One-generation reproduction toxicity study, rodents*	Gavage, rat, 7d/wk exposure, GLP, dose range finding	OECD 415, ICH 4.1.3	29 - 31
9.4	Two-generation reproduction toxicity study, rodents*	Gavage, rat, 7d/wk exposure day 6-19, GLP, dose range finding,	OECD 416, ICH 4.1.3	44 - 46
9.5	DRF for embryo-foetal development, rodents (non-GLP)*	Macroscopical external and visceral examination of foetuses	ICH 4.1.3	13 - 15
9.6	Embryo-foetal development study, rats (GLP)*	External examination - all foetuses, visceral examination - 50 % of foetuses, skeletal examination - 50 % of foetuses	ICH 4.1.3	26 - 28
9.7	Dose toleration study in pregnant rabbits (non-GLP)*	Macroscopical examination, external and fresh examination of foetuses	ICH 4.1.3	13 - 15
9.8	DRF for embryo-foetal development, rabbit (non-GLP)*	Macroscopical external and visceral examination of foetuses	ICH 4.1.3	17 - 19
9.9	Embryo-foetal development study, rabbits (GLP)*	External examination, visceral, skeletal examination - alll foetuses	ICH 4.1.3	53 - 55
9.10	DRF for fertility and early embryonic development, rodents (Non-GLP)*	Reproductive data determined for females, examination of uterus for implantation, external examination of foetuses	ICH 4.1.3	22 - 24
9.11	Fertility and early embryonic development study, rodents (GLP)*	Reproductive data determined for females, examination of uterus for implantation, external examination of foetuses	ICH 4.1.3	26 - 28
9.12	Fertility study in separate sexes - male fertility study, rodents (GLP)*	Reproductive data determined for females, examination of uterus for implantation, abnormal findings, testes, epididymides, seminal vesicles.	ICH 4.1.3	26 - 28
9.13	Fertility study in separate sexes - female fertility and early embryonic development study, rodents (GLP)*	Reproductive data determined for females, examination of uterus for implantation, abnormal findings.	ICH 4.1.3	26 - 28
9.14	DRF for effects on pre- and post-natal development, rodents (non-GLP)*	Examination of uterus for implantation, reproductive data for females, observation of newborns for abnormalities.	ICH 4.1.3	26 - 28

* Provided in the cooperation or subcontracted

10. Special Animal Models

10.1 Diabetes type I model, rats

10.2 Diabetes type II model in n-human primates

10.3 Chronic glaucoma model in beagle dogs

10.4 Chronic traumatic spinal cord injury model in miniature pigs*

10.5 Hereditary melanoma model in miniature pigs*

10.6 Arthritis model (AIA, CIA) in rats

10.7 Balloon vascular injury model in non human primates

10.8 Liver ischemia/reperfusion injury model in beagle dogs

12.9 Experimental infarction model in beagle dogs

10.10 Acute Huntington disease model in miniature pigs*

* Provided in the cooperation or subcontracted