

# Dog as the Experimental Model: Laboratory Uses of Dogs in the United States

## Supplementary Data

**Tab. S1: Research categories and research subcategories used to classify the type of biomedical research using dogs in research publications and grants**

Research category <sup>a</sup>	Research subcategory <sup>a</sup>	Clarification <sup>a</sup>
Basic research studies		Includes genetically altered animal lines intended for basic research
	Oncology	Any research studying oncology regardless of the target system
	Cardiovascular blood and lymphatic system	
	Nervous system	Includes neuroscience, peripheral or central nervous system, psychology
	Respiratory system	
	Gastrointestinal system including liver	
	Musculoskeletal system	
	Immune system	
	Urogenital/reproductive system	
	Sensory organs (skin, eyes, and ears)	Studies on nose reported under "respiratory system"; studies on tongue reported under "gastrointestinal system"
	Endocrine system/metabolism	
	Multisystemic	Research where more than one system is the primary interest such as some infectious diseases; excludes oncology
	Other	Research not related to an organ/system listed above or not organ/system specific
Translational/applied research studies: - Includes studies to benefit human and animal - Includes non-regulatory toxicology and ecotoxicology		Includes genetically altered cell line intended for translational research; discovery toxicology and investigations to prepare for regulatory submission and method development; efficacy testing during development of new medicinal products; does not include studies required for regulatory submissions
	Cancer	Includes cancer regardless of the target system; does not include carcinogenicity studies for regulatory use
	Infectious disorders	Any applied research studying infectious disorders regardless of target system
	Cardiovascular disorders	
	Nervous and mental disorders	
	Respiratory disorders	
	Gastrointestinal disorders including liver	
	Musculoskeletal disorders	
	Immune disorders	
	Urogenital/ reproductive disorders	
	Sensory organ disorders (skin, eyes and ears)	Disorders of nose reported under "respiratory disorders"; disorders of tongue reported under "gastrointestinal disorders including liver"
	Endocrine/ metabolism disorders	
	Other disorders	
Regulatory use and	Regulatory use and routine	Procedures to satisfy legal requirements for producing, placing, and

routine production by type studies	production by type studies <sup>b</sup>	maintaining products/substances on the market even if no regulatory submission made; includes animals used in manufacturing process of regulated products
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<sup>a</sup>Source: EUR-Lex (2012).

- The EU system lists human and animal subcategories separately under “translational studies.” For this study a separate data category of “species to benefit” was collected (see Tab. S2) so human or dog are not specified in Tab. S1.

- The following EU subcategories were not used in this study: Basic research studies: Ethology/animal behavior/animal biology, Translational/applied research studies: Animal welfare, Translational/applied research studies: Diagnosis of diseases, Translational/applied research studies: Plant diseases; Translational/applied research studies: Animal diseases and disorders, and Translational/applied research studies: Non-regulatory toxicology.

<sup>b</sup>Toxicology subcategories for “regulatory use” were not used for this study; “regulatory use” studies were assigned one of the biomedical subcategories used for translational/applied research.

**Tab. S2: The research category and research subcategory identifying the type of biomedical research involving the use of dogs in 97 research publications and 118 grants**

This is the data used for Figure 1 and Figure 2.

Research subcategory	Research category – publications			Research Category – grants		
	Basic research studies	Translational/applied research studies <sup>a</sup> including non-regulatory toxicology	Regulatory use	Basic research studies	Translational/applied research studies <sup>b</sup> including non-regulatory toxicology	Regulatory use
Cardiovascular disorders	6	25 (24/1)	1 (1/0)	2	19	2
Cancer		12 (9/3)	4 (4/0)		13	2
Gastrointestinal disorders including liver	3	1 (1/0)	0 (0/0)		2	1
Immune disorders human		1 (1/0)	1 (0/1)		1	
Nervous and mental disorders		9 (7/2)	2 (2/0)		9	6
Musculoskeletal disorders	3	5 (4/1)	1 (1/0)		10	1
Urogenital/reproductive disorders		1 (1/0)			3	2
Respiratory disorders		2 (0/2)			5	
Endocrine/metabolism disorders		5 (4/1)		1	3	1
Sensory organ disorders (skin, eyes and ears)	1	3 (2/1)	0 (0/0)		6	2
Infectious disorders (multisystemic for basic research)		3 (2/1)	0 (0/0)	1	5	5
Other disorders	1	5 (5/0)	2 (1/1)		15	1
<b>TOTALS</b>	14	72	11	4	91	23
	97 publications			118 grants		

<sup>a</sup>Species to benefit: Total (human and both/ dog). <sup>b</sup>Species to benefit: Total is for human and both; none for only dog