

# Spontaneous Neoplastic Lesions in the Crl:CD-1<sup>®</sup> BR Mouse

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# SPONTANEOUS NEOPLASTIC LESIONS IN THE CrI:CD-1<sup>®</sup> 13R MOUSE

These mouse data were obtained from clients who routinely use mice from Charles River Laboratories in product safety evaluation. Only control groups are presented here. These data were taken from studies run in thirteen different labs, including six contract toxicology labs and seven industrial labs. Starting dates ranged from November, 1981 to March, 1991, but most were begun in the late 1980s. This publication complements an earlier reference paper published by Charles River in February, 1987 with the same title. The study groups presented in the current publication are different from those in the previous publication.

The information presented here includes primary neoplastic lesion incidence from toxicology studies which ran for up to 24 months. It is divided into three groups because chronic mouse studies are terminated at times varying from 18 months to 24 months after initiation. The majority of the studies ran either 18 months or 24 months, but there were 7 groups which could not justifiably be added to either of these time points. They are presented in the 21 month group of studies. Study CV is presented under 21 months for males and 24 months for females because the sexes were sacrificed at different times.

## COMMON STUDY PARAMETERS

Some of the important parameters for each study group are listed in Table 1. These include the date the in-life portion of the study was initiated, the diet fed, the cage type used (either shoebox or metal with wire mesh floor), the route of dosing, and the number of animals housed per cage. The CRL animal breeding site is also presented.

Data presented in the summary tables are grouped by organ system. Included in this summary are data from mice which died or were sacrificed moribund during the course of the study and those sacrificed at study termination. No data from animals that were part of a scheduled interim sacrifice (i.e., at 12 or 18 months of study) are included in this compilation.

All studies from which these data were obtained were run under U. S. Good Laboratory Practice Regulations promulgated by either the EPA or FDA or both. Therefore a quality assurance unit oversaw

the performance of the study and reviewed the final report from which the data were taken.

## SECTIONS OF REPORT

The report is divided into three sections. Section A includes several tables describing incidence of neoplastic lesions in 18 month study groups; Section B presents 21 month study groups; Section C presents 24 month study groups.

## TABLES

Within each section two summary tables are presented; #1 is males and #2 is females. Also within each section three expanded tables are presented; one for liver (#3), lung (#4), lymphoreticular tissues (#5). The latter present data for both males and females in the same table by study group. This allows the reader to see the distribution of diagnoses across groups.

## SUMMARY TABLE CALCULATIONS

The first column in the summary tables defines the organ and tumor evaluated. The second presents the total number of tissues which were examined for each organ. The third column shows the number of study groups in which this organ was examined. Some organs, such as the nasal turbinates, were examined routinely only in a few study groups. The fourth column shows the total number of specific tumors reported in these study groups. The fifth column reports the overall incidence of each tumor. This is obtained by dividing the total number of tumors (column 4) by the total number of organs examined (column 2) and multiplying by 100 to convert it to a percent. The sixth column shows the minimum and maximum percent in which each individual tumor was diagnosed in any of the groups in which the organ was examined. For example, in the testes of males in the 18 month studies (Table A1), the interstitial cell tumor was reported at the following incidences in the 12 study groups: none in 10 groups, 1.25% in one and 4.08% in another. Therefore the minimum presented in column 5 is 0.00% and the maximum is 4.08%. In another example, female groups from the 24 month interval show incidences of bronchiolar/alveolar adenoma of 14.0%, 18.37%, 10.00%, 9.62%, 8.00%, 9.80%, 4.00%, 8.00%, 8.16%, 12.00% and 7.04%. In Table C2 column 6 the range therefore is reported as 4.00% to 18.37%

## LIVER LESIONS

The liver lesions listed in these tables are not necessarily neoplastic lesions. The altered foci and nodular proliferation are thought to possibly be pre-neoplastic lesions and are presented here because their incidence is frequently requested. The expanded tables presenting all liver lesions allow the reader to interpret the data according to need.

## SURVIVAL GRAPHS

Survival data for each group of animals reported above are shown in Figures 1-6 by study code. This information is shown here for two reasons. First, the actual range of survival values for groups of mice at these three time points can be used to compare to other datasets either in-house or from the literature. Second, the distribution of animals sacrificed at study termination vs. those which died (or were sacrificed moribund) during the course of each study can be

compared between groups. Also, the tumor incidence in the lungs, liver and lymphoreticular tissues in which there was good survival can be compared to that in groups with poor survival.

When fate tables were available, the data were transformed using the Kaplan-Meier procedure (Kaplan, E. and P. Meier, "Non-parametric Estimation from Incomplete Observations", Journal of the American Statistical Association, 23:1958 p. 457). This procedure handles the mice that were killed accidentally (from gavage error, bleeding procedure, etc.) during the course of the study differently than those that died or were sacrificed moribund. When individual fate tables were not available, the total number of mice surviving at study termination was reported as a percent of the total at initiation. Animals that were sacrificed prior to study termination for the purpose of evaluating health at that interval (interim sacrifice group) were not included in this calculation.

## SYNONYMS

In compiling the summary tables for neoplastic lesions, it became clear that pathologists gave different names to the same tumor. In general, it was felt that the information would be more useful to the reader if identical, or similar, tumors were combined under one heading. For example, all tumors of granulosa cell origin, including tumors of luteinized cells, were combined in the category "granulosa/theca cell tumor". Recent texts used in developing lists of synonyms included "Mouse Histopathology", by J.M. Faccini, D.P. Abbott, and G.J.J. Paulus, Elsevier, 1990, and "Pathology of Laboratory Rodents and Rabbits", by D.H. Percy and S.W. Barthold, Iowa State University Press, 1993.

The synonyms which were included in the various diagnoses are presented in the synonym list which follows. Synonymous terms or diagnoses were frequently encountered in different study groups, and for utilitarian purposes were combined under a single, often broad, diagnosis, which was termed the primary diagnosis. Although some effort was made to use currently acceptable terms, it is beyond the scope of this publication to propose a system of "preferred" diagnoses. The number of lesions reported in each table include all those listed by either the primary diagnoses or the synonymous diagnoses.

## SYNONYMS

### Ovary:

**CYSTADENOMA:** tubular adenoma; papillary adenoma; papilloma; papillary cystadenoma; adenoma

**GRANULOSA/THECA CELL TUMOR:** luteoma; granulosa cell tumor, luteinized

### Uterus:

**ENDOMETRIAL STROMAL SARCOMA:** sarcoma, endometrial sarcoma, stromal sarcoma

**ENDOMETRIAL STROMAL POLYP:** glandular polyp, endometrial polyp, polyp (B),

**ADENOCARCINOMA:** endometrial adenocarcinoma

**LEIOMYOSARCOMA:** leiomyoma/leiomyosarcoma

### Pituitary Gland:

**ADENOMA:** adenoma, pars distalis; adenoma, anterior lobe

**CARCINOMA:** carcinoma, pars distalis

### Bone:

**OSTEOSARCOMA:** osteogenic sarcoma

### Lymphoreticular Tumors:

**MALIGNANT LYMPHOMA (NOS):** lymphosarcoma; malignant lymphoma undifferentiated

**HISTIOCYTIC SARCOMA:** malignant lymphoma histiocytic; reticulum cell sarcoma

### Mammary Gland:

**CARCINOMA:** adenocarcinoma; adenocarcinoma, Type A (acinar pattern); adenocarcinoma, Type B (multiform)

### Lung:

**BRONCHIOLAR/ALVEOLAR ADENOMA:** adenoma; pulmonary adenoma

**BRONCHIOLAR/ALVEOLAR CARCINOMA:** carcinoma; pulmonary carcinoma; adenocarcinoma; pulmonary adenocarcinoma

### Liver:

**NODULAR HEPATOCELLULAR PROLIFERATION:** nodular hyperplasia

**HEPATOCELLULAR ADENOMA:** benign liver cell tumor

**HEPATOCELLULAR CARCINOMA:** malignant liver cell tumor

**ACIDOPHILIC FOCUS:** eosinophilic focus; hepatocellular alteration, eosinophilic

**BASOPHILIC FOCUS:** basophilic hepatocytes; hepatocellular alteration, basophilic

### Adrenal:

**CORTICAL ADENOCARCINOMA:** carcinoma

### Kidney:

**RENAL CELL ADENOMA:** tubular adenoma

**RENAL CELL CARCINOMA:** tubular carcinoma

Table 1  
STUDY GROUP INFORMATION  
18 MONTH STUDIES

Study Code	DJ	DI	DH	DL	BU	DK	AB	M	I	DF	DY	DG
Study Start Date	Mar-91	Oct-90	Jun-90	Nov-90	Dec-84	Oct-90	Sep-85	Mar-85	Oct-85	May-85	Jun-90	Feb-91
Diet	LAD #2	LAD #2	LAD #1	LAD#2	Purina	LAD #2	Purina	Purina	Purina	Purina	LAD #2	LAD #2
CRL Source	UK	UK	UK	UK	Portage	UK	Kingston	Kingston	Kingston	Wilmington	UK	UK
Cage Type	box w/ bed	box w/ bed	box w/bed	box w/bed	wire mesh	box w/ bed	wire mesh	wire mesh	wire mesh	wire mesh	box w/ bed	box w/ bed
Route of Dosing	diet	diet	gavage-	diet	diet	diet	diet	diet	diet	dermal+	diet	diet
Diet Form	ground	ground	extruded	ground	ground	ground	ground	ground*	ground	pellets	ground	ground
No. per Cage	1	4	4	4	1	4	1	1	1	1	4	4

\* with 0.5% corn oil

vehicle control received 5% gum arabic

+ vehicle patched with purified water

### 21 MONTH STUDIES

Study Code	CT	DE	DD	CI	CJ	EF	CV
Study Start Date	Aug 85	Mar-86	Feb-85	Jun-86	Jun-86	Oct-90	Jul-83
Diet	Purina	Purina	Labsure RM M(S)	Altromin	Altromin	R/M 1	Purina
CRL Source	Kingston	Kingston	UK	Germany	Germany	UK	Kingston
Cage Type	wire mesh	wire mesh	wire mesh	box w/bed	box w/bed	box w/ bed	wire mesh
Route of Dosing	diet	diet	gavage	diet	diet	diet	diet
Diet Form	ground	ground	extruded	ground	ground	ground	ground
No. per Cage	1	1	4	M1, F2-4	M1, F2-4	1	1

### 24 MONTH STUDIES

Study Code	CX	CQ	CR	DN	DU	DZ	CP	BX	EG	CV
Study Start Date	Sep-83	Apr-85	Apr-85	Jan-88	Sep-89	Oct-90	Jul-85	Nov-81	Aug-89	Jul-83
Diet	LAD #2	Purina	Purina	RM-1	RM-1	RM-1	RM-1	LAD #2	RM-1	Purina
CRL Source	UK	Q	Q	UK	UK	UK	UK	UK	UK	Kingston
Cage Type	wire mesh	wire mesh	wire mesh	box/bed	box/bed	box/bed	wire mesh	box/bed	box/bed	wire mesh
Route of Dosing	diet	diet	diet	diet	diet	diet	diet	diet	diet	diet
Diet Form	ground	ground	ground	ground	ground	ground	ground	ground	ground	ground
No. per Cage	4	1	1	1	1	1	3	4	1	1

Table A 1  
NEOPLASMS  
18 MONTH STUDIES  
MALE CD-1<sup>®</sup> MICE

LOCATION & TUMOR	No. Tissues Examined	No. Study Groups	Total No. Tumors	Mean Percent	Range Percent
<b>HEMATOPOIETIC SYSTEM</b>					
LYMPH NODES	718	12			
THYMUS	648	12			
SPLEEN	767	12			
hemangiosarcoma			4	0.52	0-2.53
BONE MARROW	640	10			
<b>LYMPHORETICULAR TUMORS</b>					
malignant lymphoma, (NOS)	770 <sup>^^</sup>	12	14	1.82	0-5.77
malignant lymphoma, lymphocytic			2	0.26	0-1.25
malignant lymphoma, mixed cell			2	0.26	0-1.25
histiocytic sarcoma			5	0.65	0-5.00
<b>INTEGUMENTARY SYSTEM</b>					
<b>SKIN/SUBCUTIS</b>					
lipoma	741	12	5	0.67	0-4.00
neurofibroma			1	0.13	0-1.03
basal cell tumor			1	0.13	0-3.70
fibroma			1	0.13	0-3.70
sarcoma			3	0.40	0-3.85
adenocarcinoma			1	0.13	0-1.92
squamous cell carcinoma, footpad			1	0.13	0-1.25
MAMMARY GLAND	279	7			
<b>MUSCULOSKELETAL SYSTEM</b>					
<b>SKELETAL MUSCLE</b>					
sarcoma, musculoskeletal sys.	476	7	3*		
osteosarcoma			1	0.21	0-1.25
BONE	697	12			
sarcoma			1	0.14	0-1.92
<b>RESPIRATORY SYSTEM</b>					
<b>NASAL TURBINATES</b>					
hemangiosarcoma	236	3	1	0.42	0-1.32
TRACHEA	409	6			
<b>LUNG</b>					
bronchiolar/alveolar adenoma	770	12	58	7.53	1.92-12.00
bronchiolar/alveolar carcinoma			45	5.84	0-21.15
<b>CIRCULATORY SYSTEM</b>					
<b>HEART</b>					
HEART	770	12			
AORTA	413	6			

**Table AI (Cont.)**

LOCATION & TUMOR	No. Tissues Examined	No. Study Groups	Total No. Tumors	Mean Percent	Range Percent
<b>DIGESTIVE SYSTEM</b>					
ORAL CAVITY	+				
squamous cell papilloma			1		
squamous cell papilloma, tongue			1		
SALIVARY GLAND	720	11			
fibrosarcoma			1	0.14	0-1.92
ESOPHAGUS	509	7			
STOMACH	743	12			
adenoma			1	0.13	0-1.18
SMALL INTESTINE	716	12			
adenoma			1	0.14	0-1.89
polypoid adenoma			1	0.14	0-1.28
adenocarcinoma			1	0.14	0-1.18
COLON/CECUM	678	11			
carcinoma, cecum			1	0.15	0-1.92
LIVER	770	12			
focus/area of cellular alteration			3	0.39	0-2.50
acidophilic focus/area			1	0.13	0-1.92
clear cell focus/area			3	0.39	0-2.00
basophilic focus/area			7	0.91	0-5.00
nodular hepatocellular proliferation			15	1.95	0-15.38
hepatocellular adenoma			83	10.78	0-19.23
hepatocellular carcinoma			38	4.94	1.25-11.54
hemangioma			3	0.39	0-2.50
hemangiosarcoma			8	1.04	0-3.85
GALL BLADDER	659	11			
papilloma (B)			1	0.15	0-2.27
PANCREAS (EXOCRINE)	763	12			
<b>URINARY SYSTEM</b>					
KIDNEY	770	12			
URINARY BLADDER	758	12			
leiomyoma			2	0.26	0-2.53
leiomyosarcoma			1	0.13	0-1.27
undifferentiated sarcoma			1	0.13	0-1.27
<b>REPRODUCTIVE SYSTEM</b>					
TESTIS	768	12			
interstitial cell tumor (B)			3	0.39	0-4.08
granular cell tumor (M)			1	0.13	0-1.92
germ cell tumor (M)			1	0.13	0-1.92
hemangioma			1	0.13	0-1.25
fibrosarcoma, epididymides			1	0.13	0-1.92
PROSTATE	660	11			
SEMINAL VESICLES	766	12			
PREPUTIAL/CLITORAL GLAND**	91	1			
adenoma			1		1.10



**Table AI (Cont.)**

LOCATION & TUMOR	No. Tissues Examined	No. Study Groups	Total No. Tumors	Mean Percent	Range Percent
<b>ENDOCRINE SYSTEM</b>					
PANCREAS (ENDOCRINE)	763	12			
islet cell adenoma			1	0.13	0-1.69
PITUITARY GLAND	607	11			
THYROID GLAND	757	12			
follicular cell adenoma			4	0.53	0-2.53
PARATHYROID GLAND	499	11			
adenoma (B)			5++	1.00	0-10.42
ADRENAL GLAND	759	12			
nodular hyperplasia			17++	2.24	0-17.17
cortical adenoma			15	1.98	0-11.67
cortical adenocarcinoma			1	0.13	0-1.01
pheochromocytoma(B)			2	0.26	0-1.92
<b>NERVOUS SYSTEM</b>					
SPINAL CORD	716	12			
BRAIN	637	11			
astrocytoma(B)			1	0.16	0-1.18
oligodendroglioma			1	0.16	0-1.25
PERIPHERAL NERVES	489	8			
<b>SPECIAL SENSES</b>					
EYE AND ADNEXA	751	12			
LACRIMAL GLAND	331	4			
adenoma			5-H-	1.51	0-5.43
HARDERIAN GLAND	239	3			
adenoma			6++	2.51	0-7.59 <sup>A</sup>
papillary cystadenoma			2++	0.84	0-2.5
<b>BODY CAVITIES</b>					
ABDOMINAL CAVITY	+				
mesothelioma (M), mesentery			1		

\* 2 found in one group, one in another: muscle tissue was not on tissue list to be examined in either study

\*\* examined in one study only

<sup>A</sup> | additional adenoma found in group in which Harderian gland not on tissue list to be examined

<sup>AA</sup> number animals examined

+ gross lesions not reported elsewhere

++ all found in one study group

Table A2  
NEOPLASMS  
18 MONTH STUDIES  
FEMALE CD-1<sup>®</sup> MICE

LOCATION & TUMOR	No. Tissues Examined	No. Study Groups	Total No. Tumors	Mean Percent	Range Percent
<b>HEMATOPOIETIC SYSTEM</b>					
LYMPH NODES	732	12			
hemangiosarcoma			1	0.14	0-1.14
myeloid sarcoma (M)			1	0.14	0-1.14
THYMUS	693	12			
thymoma			1	0.14	0-1.41
SPLEEN	768	12			
hemangioma			1	0.13	0-1.92
hemangiosarcoma			2	0.26	0-1.92
BONE MARROW	667	10			
LYMPHORETICULAR TUMORS	770 <sup>^^</sup>	12			
malignant lymphoma, (NOS)			49	6.36	0-23.08
malignant lymphoma, lymphocytic			6	0.78	0-5.00
lymphosarcoma (thymus)			16 <sup>++</sup>	2.08	0-26.67
malignant lymphoma, mixed cell			1	0.13	0-1.25
histiocytic sarcoma			17	2.21	0-10.00
large granular lymphocyte leukemia			1	0.13	0-1.92
<b>INTEGUMENTARY SYSTEM</b>					
SKIN/SUBCUTIS	730	12			
hair matrix tumor (B)			1	0.14	0-1.04
basal cell carcinoma			1	0.14	0-1.27
adenocarcinoma			1	0.14	0-1.67
sarcoma			2	0.27	0-3.33
MAMMARY GLAND	610	10			
fibroadenoma			1	0.16	0-1.69
carcinoma (M)			13 <sup>*</sup>	2.13	0-5.77
<b>MUSCULOSKELETAL SYSTEM</b>					
SKELETAL MUSCLE	463	7			
rhabdomyosarcoma			1 <sup>**</sup>		
BONE	769	12			
osteoma			1	0.13	0-1.27
osteosarcoma			1	0.13	0-1.67
<b>RESPIRATORY SYSTEM</b>					
NASAL TURBINATES	239	3			
TRACHEA	454	6			
LUNG	770	12			
bronchiolar/alveolar adenoma			50	6.49	0-15.38
bronchiolar/alveolar carcinoma			31	4.03	0-9.62
leiomyosarcoma			1	0.13	0-1.00
<b>CIRCULATORY SYSTEM</b>					
HEART	774	12			
AORTA	402	6			

**Table A2 (Cont.)**

LOCATION & TUMOR	No. Tissues Examined	No. Study Groups	Total No. Tumors	Mean Percent	Range Percent
<b>DIGESTIVE SYSTEM</b>					
SALIVARY GLAND	718	11			
carcinoma			1	0.14	0-1.92
ESOPHAGUS	504	7			
STOMACH	747	12			
squamous cell carcinoma			1	0.13	0-1.67
SMALL INTESTINE	731	12			
COLON/CECUM	649	11			
leiomyoma, cecum			1	0.15	0-1.25
LIVER	769	12			
acidophilic focus/area			2	0.26	0-1.92
basophilic focus/area			3	0.39	0-3.85
nodular hepatocellular proliferation			1	0.13	0-1.67
hepatocellularadenoma			5	0.65	0-2.00
hepatocellular carcinoma			3	0.39	0-2.00
hemangioma			3	0.39	0-2.50
hemangiosarcoma			6	0.78	0-2.50
GALL BLADDER	686	11			
PANCREAS (EXOCRINE)	769	12			
<b>URINARY SYSTEM</b>					
KIDNEY	770	12			
URINARY BLADDER	726	12			
transitional cell carcinoma			2	0.28	0-1.72
<b>REPRODUCTIVE SYSTEM</b>					
OVARY	761	12			
cystadenoma			9	1.18	0-3.85
granulosa/theca cell tumor			6	0.79	0-2.53
fibroma			1	0.13	0-1.69
hemangioma			3	0.39	0-1.96
hemangiosarcoma			1	0.13	0-1.67
UTERUS/CERVIX	766	12			
adenocarcinoma(M)			1	0.13	0-1.92
endometrial stromal					
polyp			24	3.13	0-13.92
endometrial stromal sarcoma			4	0.52	0-6.00
leiomyoma			13	1.70	0-3.85
leiomyoma, cervical			1	0.13	0-2.00
leiomyosarcoma			8	1.04	0-8.00
hemangioma (B)			2	0.26	0-1.92

**Table A2 (Cont.)**

LOCATION & TUMOR	No. Tissues Examined	No. Study Groups	Total No. Tumors	Mean Percent	Range Percent
<b>ENDOCRINE SYSTEM</b>					
PANCREAS (ENDOCRINE)	769	12			
PITUITARY GLAND	651	11			
adenoma			5	0.77	0-2.08
THYROID GLAND	757	12			
adenoma			1	0.52	0-1.92
C-cell adenoma			1	0.13	0-1.67
PARATHYROID GLAND	489	11			
adenoma(B)			2	0.41	0-3.08
ADRENAL GLAND	762	12			
nodular hyperplasia			2++	0.26	0-2.02
cortical adenocarcinoma			1	0.13	0-1.25
pheochromocytoma(B)			1	0.13	0-1.01
pheochromocytoma (M)			1	0.13	0-1.01
<b>NERVOUS SYSTEM</b>					
SPINAL CORD	732	12			
BRAIN	631	11			
PERIPHERAL NERVES	514	8			
<b>SPECIAL SENSES</b>					
EYE AND ADNEXA	757	12			
LACRIMAL GLAND	323	4			
adenoma			3++	0.93	0-3.33
HARDERIAN GLAND	239	3			
adenoma			10	4.18	0-8.75 <sup>A</sup>
carcinoma			1 <sup>**</sup>		
<b>OTHER</b>					
hemangioma, tail (M)	+		1		

\* 2 additional carcinomas found in study group in which mammary not on tissue list to be examined

\*\* found in group in which tissue was not on list to be examined

<sup>A</sup> 1 additional adenoma found in group in which Harderian gland not on tissue list to be examined

<sup>AA</sup> number animals examined

+ gross lesions not reported elsewhere

++ all found in one study group

Table A3  
LIVER NEOPLASMS BY STUDY GROUP  
18 MONTH STUDIES  
MALE

Study Code	DJ	DI	DH	ED	DL	DK	AB	DY	I	M	DG	DF
No. tissues examined	50	52	60	100	52	52	80	52	80	80	52	60
focus/area of cellular alteration									1	2		
%									1.25	2.50		
acidophilic focus/area											1	
%											1.92	
clear cell focus/area	1				1						1	
%	2.00				1.92						1.92	
basophilic focus/area		1	1		2							3
%		1.92	1.67		3.85							5.00
nodular hepatocellular proliferation	2		4			8					1	
%	4.00		6.67			15.38					1.92	
hepatocellular adenoma	4	10		16	10	2	9	3	4	11	8	6
%	8.00	19.23		16.00	19.23	3.85	11.25	5.77	5.00	13.75	15.38	10.00
hepatocellular carcinoma	1	1	2	6	4	6	3	6	4	1	2	2
%	2.00	1.92	3.33	6.00	7.69	11.54	3.75	11.54	5.00	1.25	3.85	3.33
hemangioma				1					2			
%				1.00					2.50			
hemangiosarcoma	1				1	2	1			3		
%	2.00				1.92	3.85	1.25			3.75		

FEMALE

Study Code	DJ	DI	DH	ED	DL	DK	AB	DY	I	M	DG	DF
No. tissues examined	50	52	60	100	52	52	80	52	80	80	51	60
acidophilic focus/area		1		1								
%		1.92		1.00								
basophilic focus/area				1	2							
%				1.00	3.85							
nodular hepatocellular proliferation			1									
%			1.67									
hepatocellular adenoma	1			2			1			1		
%	2.00			2.00			1.25			1.25		
hepatocellular carcinoma	1					1				1		
%	2.00					1.92				1.25		
hemangioma		1							2			
%		1.92							2.50			
hemangiosarcoma	1		1				2			1	1	
%	2.00		1.67				2.50			1.25	1.96	

Table A4  
LUNG NEOPLASMS BY STUDY GROUP  
18 MONTH STUDIES  
MALE

Study Code	DJ	DI	DH	ED	DL	DK	AB	DY	I	M	DG	DF
No. tissues examined	50	52	60	100	52	52	80	52	80	80	52	60
bronchiolar/alveolar adenoma	6	4	5	12	5	4	3	5	5	4	1	4
%	12.00	7.69	8.33	12.00	9.62	7.69	3.75	9.62	6.25	5.00	1.92	6.67
bronchiolar/alveolar carcinoma	4	4	9	2	3	6		5		1	11	
%	8.00	7.69	15.00	2.00	5.77	11.54		9.62		1.25	21.15	

FEMALE

Study Code	DJ	DI	DH	ED	DL	DK	AB	DY	I	M	DG	DF
No. tissues examined	50	52	60	100	52	52	80	52	80	80	52	60
bronchiolar/alveolar adenoma		3		14	1	8	8	3	3	4	3	3
%		5.77		14.00	1.92	15.38	10.00	5.77	3.75	5.00	5.77	5.00
bronchiolar/alveolar carcinoma	3	5	2	6	5	2		1	1	2	3	1
%	6.00	9.62	3.33	6.00	9.62	3.85		1.92	1.25	2.50	5.77	1.67
leiomyosarcoma				1								
%				1.00								

**Table AS**  
**LYMPHORETICULAR NEOPLASMS BY STUDY GROUP**  
**18 MONTH STUDIES**  
**MALE**

Study Code	DJ	DI	DH	ED	DL	DK	AB	DY	I	M	DG	DF
No. animals examined	50	52	60	100	52	52	80	52	80	80	52	60
malignant lymphoma, (NOS)	2	2		1		3	1	1	1		1	2
%	4.00	3.85		1.00		5.77	1.25	1.92	1.25		1.92	3.33
malignant lymphoma, lymphocytic									1	1		
%									1.25	1.25		
malignant lymphoma, mixed cell									1	1		
%									1.25	1.25		
histiocytic sarcoma		1	3								1	
%		1.92	5.00								1.92	

**FEMALE**

Study Code	DJ	DI	DH	ED	DL	DK	AB	DY	I	M	DG	DF
No. animals examined	50	52	60	100	52	52	80	52	80	80	52	60
malignant lymphoma, (NOS)	1	3	5	9	5	12	6	5	2		1	
%	2.00	5.77	8.33	9.00	9.62	23.08	7.50	9.62	2.50		1.92	
malignant lymphoma, lymphocytic									4	2		
%									5.00	2.50		
lymphosarcoma (thymus)												16
%												26.67
malignant lymphoma, mixed cell										1		
%										1.25		
histiocytic sarcoma	5		1		1	1	1	1	2	4	1	
%	10.00		1.67		1.92	1.92	1.25	1.92	2.50	5.00	1.92	
large granular lymphocyte, leukemia											1	
%											1.92	

Table B 1  
NEOPLASMS  
21 MONTH STUDIES  
MALE CD-1<sup>®</sup> MICE

LOCATION & TUMOR	No. Tissues Examined	No. Study Groups	Total No. Lesions	Mean Percent	Range Percent
<b>HEMATOPOIETIC SYSTEM</b>					
LYMPH NODES	358	7			
hemangioma			1	0.28	0-1.89
THYMUS	287	7			
SPLEEN	369	7			
hemangiosarcoma			3	0.81	0-2.00
BONE MARROW	368	7			
hemangiosarcoma			1	0.27	0-2.00
LYMPHORETICULAR TUMORS	160 <sup>^^</sup>	3			
malignant lymphoma (NOS)			2	1.25	0-2.00
malignant lymphoma, lymphocytic			3++	1.88	0-6.00
malignant lymphoma, mixed			1	0.63	0-2.00
histiocytic sarcoma			2	1.25	0-2.00
<b>INTEGUMENTARY SYSTEM</b>					
SKIN/SUBCUTIS	368	7			
sarcoma			1	0.27	0-2.00
lipoma			1	0.27	0-2.00
hemangioma			1	0.27	0-1.72
MAMMARY GLAND	167	4			
<b>MUSCULOSKELETAL SYSTEM</b>					
SKELETAL MUSCLE	310	6			
BONE	318	6			
<b>RESPIRATORY SYSTEM</b>					
TRACHEA	270	5			
NASAL TURBINATES	51	1			
LUNG	370	7			
bronchiolar/alveolar adenoma			43	11.62	0-26.00
bronchiolar/alveolar carcinoma			18	4.86	0-16.67
<b>CIRCULATORY SYSTEM</b>					
VASCULAR SYSTEM	+				
hemangiosarcoma			2		
HEART	370	7			
AORTA	156	3			



Table B 1 (Cont.)

LOCATION & TUMOR	No. Tissues Examined	No. Study Groups	Total No. Lesions	Mean Percent	Range Percent
<b>DIGESTIVE SYSTEM</b>					
ESOPHAGUS	270	5			
GALL BLADDER	339	7			
STOMACH	368	7			
SALIVARY GLAND	369	7			
mixed tumor, (M)			1	0.27	0-2.00
SMALL INTESTINE	365	7			
LIVER	370	7			
basophilic focus/area			3	0.81	0-5.00
nodular hepatocellular proliferation			1	0.27	0-2.00
hepatocellular adenoma			28	7.57	0-12.00
hepatocellular carcinoma			20	5.41	0-12.00
hemangioma			3	0.81	0-3.33
hemangiosarcoma			10	2.70	0-6.00
COLON/CECUM	363	7			
PANCREAS (EXOCRINE)	369	7			
<b>URINARY SYSTEM</b>					
KIDNEY	370	7			
URINARY BLADDER	370	7			
<b>REPRODUCTIVE SYSTEM</b>					
TESTIS	369	7			
interstitial cell tumor (NOS)			2	0.54	0-2.00
interstitial cell adenoma			1	0.27	0-2.00
sarcoma, epididymides, (NOS)			1	0.27	0-1.69
sarcoma, undifferentiated			1	0.27	0-1.67
PROSTATE	367	7			
SEMINAL VESICLES	309	7			
<b>ENDOCRINE SYSTEM</b>					
PANCREAS (ENDOCRINE)	369	7			
PITUITARY GLAND	325	7			
THYROID GLAND	369	7			
follicular cell adenoma			2++	0.54	0-3.33
PARATHYROID GLAND	307	7			
ADRENAL GLAND	368	7			
cortical adenoma			5	1.36	0-6.00
pheochromocytoma(B)			1	0.27	0-1.67

Table B 1 (Cont.)

LOCATION & TUMOR	No. Tissues Examined	No. Study Groups	Total No. Lesions	Mean Percent	Range Percent
<b>NERVOUS SYSTEM</b>					
SPINAL CORD	310	6			
BRAIN	369	7			
PERIPHERAL NERVES	272	6			
<b>SPECIAL SENSES</b>					
EYE AND ADNEXA	260	5			
HARDERIAN GLAND	151	3			
adenoma			3	1.99	0-3.45
LACRIMAL GLAND	127	3			
<b>BODY CAVITIES</b>					
ABDOMINAL CAVITY	+				
sarcoma (M)			1		

^ 1 additional adenoma was found in a group in which Harderian gland not on the tissue list to be examined

+ gross lesions not reported elsewhere

++ all found in one study group

^^ number animals examined

Table B2  
NEOPLASMS  
21 MONTH STUDIES  
FEMALE CD-1<sup>®</sup> MICE

LOCATION & TUMOR	No. Tissues Examined	No. Study Groups	Total No. Lesions	Mean Percent	Range Percent
<b>HEMATOPOIETIC SYSTEM</b>					
LYMPH NODES	312	6			
leiomyosarcoma			1	0.32	0-1.85
THYMUS	278	6			
carcinoma			1	0.36	0-3.33
BONE MARROW	319	6			
SPLEEN	317	6			
hemangiosarcoma			2++	0.63	0-4.00
<b>LYMPHORETICULAR TUMORS</b>					
malignant lymphoma (NOS)	160 <sup>^^</sup>	3	12	7.50	0-14.00
malignant lymphoma, lymphocytic			9++	5.63	0-18.00
malignant lymphoma, mixed			2++	1.25	0-4.00
histiocytic sarcoma			6	3.75	0-6.00
<b>INTEGUMENTARY SYSTEM</b>					
SKIN/SUBCUTIS	320	6			
myxoma			1	0.31	0-2.00
MAMMARY GLAND	303	6			
carcinoma (M)			7	2.31	0-4.08
<b>MUSCULOSKELETAL SYSTEM</b>					
SKELETAL MUSCLE	260	5			
BONE	269	5			
osteogenic sarcoma			1	0.37	0-1.69
<b>RESPIRATORY SYSTEM</b>					
NASAL TURBINATES	56	1			
TRACHEA	220	4			
LUNG	320	6			
bronchiolar/alveolar adenoma			20	6.25	0-10.00
bronchiolar/alveolar carcinoma			10	3.13	0-10.00
<b>CIRCULATORY SYSTEM</b>					
<b>VASCULAR SYSTEM</b>					
hemangioma	+		1		
hemangiosarcoma			4++		
HEART	320	6			
AORTA	149	3			

**Table B2 (Cont.)**

LOCATION & TUMOR	No. Tissues Examined	No. Study Groups	Total No. Lesions	Mean Percent	Range Percent
<b>DIGESTIVE SYSTEM</b>					
SALIVARY GLAND	319	6			
ESOPHAGUS	214	4			
STOMACH	315	6			
sarcoma			1	0.32	0-2.00
SMALL INTESTINE	310	6			
COLON/CECUM	309	6			
LIVER	318	6			
focus/area of cellular alteration			1	0.31	0-2.00
hepatocellularadenoma			4	1.26	0-2.00
hepatocellular carcinoma			1	0.31	0-1.72
hemangiosarcoma			4	1.26	0-2.00
GALL BLADDER	280	6			
PANCREAS (EXOCRINE)	318	6			
leiomyosarcoma			1	0.31	0-1.72
<b>URINARY SYSTEM</b>					
KIDNEY	318	6			
leiomyosarcoma			1	0.31	0-1.72
URINARY BLADDER	314	6			
carcinosarcoma			1	0.32	0-2.00
carcinoma			1	0.32	0-2.00
<b>REPRODUCTIVE SYSTEM</b>					
OVARY	317	6			
cystadenoma			3	0.95	0-4.00
granulosa/theca cell tumor			7	2.21	0-6.67
fibroma			1	0.32	0-2.00
leiomyosarcoma			1	0.32	0-1.75
UTERUS/CERVIX	318	6			
adenocarcinoma			1	0.31	0-2.00
endometrial stromal polyp			17	5.35	1.67-10.00
endometrial stromal sarcoma			6	1.89	0-4.02
fibroma			2++	0.63	0-4.00
leiomyoma			3	0.94	0-4.01
leiomyosarcoma			5	1.57	0-4.03
hemangiosarcoma			1	0.31	0-2.00

**Table B2 (Cont.)**

LOCATION & TUMOR	No. Tissues Examined	No. Study Groups	Total No. Lesions	Mean Percent	Range Percent
<b>ENDOCRINE SYSTEM</b>					
PANCREAS (ENDOCRINE)	318	6			
islet cell adenoma			1	0.31	0-2.00
PITUITARY GLAND	316	6			
adenoma			3	0.95	0-3.57
carcinoma			1	0.32	0-2.00
meningioma			1	0.32	0-1.79
THYROID GLAND	319	6			
PARATHYROID GLAND	282	6			
adenoma			1	0.35	0-3.13
ADRENAL GLAND	317	6			
cortical adenoma			11++	3.47	0-22.45
leiomyosarcoma			1	0.32	0-1.72
<b>NERVOUS SYSTEM</b>					
SPINAL CORD	260	5			
BRAIN	319	6			
PERIPHERAL NERVES	260	5			
<b>SPECIAL SENSES</b>					
EYE AND ADNEXA	210	4			
LACRIMAL GLAND	126	3			
HARDERIAN GLAND	108	2			
adenoma			2	1.85	0-2.08
<b>BODY CAVITIES</b>					
ABDOMINAL CAVITY	+				
hemangiosarcoma			1		
sarcoma			1		

+ gross lesions not reported elsewhere

<sup>AA</sup> number animals examined

++ all found in one study group

**Table B3**  
**LIVER NEOPLASMS BY STUDY GROUP**  
**21 MONTH STUDIES**  
**MALE**

Study Code	CT	DE	DD	CI	CJ	EF	CV*
No. tissues examined	50	60	60	50	50	50	50
basophilic focus/area		3					
%		5.00					
nodular hepatocellular proliferation				1			
%				2.00			
hepatocellular adenoma	4	7		3	3	6	5
%	8.00	11.67		6.00	6.00	12.00	10.00
hepatocellular carcinoma	2	2	6		2	2	6
%	4.00	3.33	10.00		4.00	4.00	12.00
hemangioma		2					1
%		3.33					2.00
hemangiosarcoma	1	1	1	1	3		3
%	2.00	1.67	1.67	2.00	6.00		6.00

**FEMALE**

Study Code	CT	DE	DD	CI	CJ	EF
No. tissues examined	50	58	60	50	50	50
focus !area of cellular alteration				1		
%				2.00		
hepatocellular adenoma	1	1			1	1
%	2.00	1.72			2.00	2.00
hepatocellular carcinoma		1				
%		1.72				
hemangiosarcoma	1	1		1	1	
%	2.00	1.72		2.00	2.00	

\* Data on females are found in 24 month study tables.

Table B4  
LUNG NEOPLASMS BY STUDY GROUP  
18 MONTH STUDIES  
MALE

Study Code	CT	DE	DD	CI	CJ	EF	CV*
No. tissues examined	50	60	60	50	50	50	50
bronchiolar/alveolar adenoma	8	13		2	3	13	4
%	16.00	21.67		4.00	6.00	26.00	8.00
bronchiolar/alveolar carcinoma	2	3	10		1	2	
%	4.00	5.00	16.67		2.00	4.00	

FEMALE

Study Code	CT	DE	DD	CI	CJ	EF
No. tissues examined	50	60	60	50	50	50
bronchiolar/alveolar adenoma	5	3		3	4	5
%	10.00	5.00		6.00	8.00	10.00
bronchiolar/alveolar carcinoma	1	1	6			2
%	2.00	1.67	10.00			4.00

\* Data on females found in 24 month study tables.

**Table B5**  
**LYMPHORETICULAR NEOPLASMS BY STUDY GROUP**  
**21 MONTH STUDIES**  
**MALE**

Study Code	CT	DE	DD	CI	CJ	EF	CV*
No. animals examined	50	60		---		50	
malignant lymphoma (NOS)		1				1	
%		1.67				2.00	
malignant lymphoma, lymphocytic	3						
%	6.00						
malignant lymphoma, mixed	1						
%	2.00						
histiocytic sarcoma	1					1	
%	2.00					2.00	

FEMALE

Study Code	CT	DE	DD	CI	CJ	EF
No. animals examined	50	60				50
malignant lymphoma (NOS)		5				7
%		8.33				14.00
malignant lymphoma, lymphocytic	9					
%	18.00					
malignant lymphoma, mixed	2					
%	4.00					
histiocytic sarcoma	3	1				2
%	6.00	1.67				4.00

\* Data on females are found in 24 month study tables.



**Table C1**  
**NEOPLASMS**  
**24 MONTH STUDIES**  
**MALE CD-1<sup>®</sup> MICE**

LOCATION & TUMOR	No. Tissues Examined	No. Study Groups	Total No. Tumors	Mean Percent	Range Percent
<b>HEMATOPOIETIC SYSTEM</b>					
LYMPH NODES	488	10			
hemangiosarcoma			1	0.20	0-2.04
THYMUS	406	10			
thymic lymphoma			1	0.25	0-1.64
SPLEEN	519	10			
hemangiosarcoma			3	0.58	0-2.08
BONE MARROW	259	6			
LYMPHORETICULAR TUMORS	423 <sup>^^</sup>	8			
malignant lymphoma (NOS)			25	5.91	0-12.00
malignant lymphoma, lymphocytic			2++	0.47	0-4.00
malignant lymphoma, mixed			1	0.24	0-2.00
histiocytic sarcoma			8	1.89	0-7.69
mast cell tumor			1	0.24	0-2.04
<b>INTEGUMENTARY SYSTEM</b>					
SKIN/SUBCUTIS	523	10			
squamous cell carcinoma			2	0.38	0-2.00
sarcoma			4	0.76	0-4.23
hemangiosarcoma			1	0.19	0-2.04
subcutaneous fibrosarcoma (M)			2	0.38	0-3.85
MAMMARY GLAND	364	9			
<b>MUSCULOSKELETAL SYSTEM</b>					
SKELETAL MUSCLE	437	9			
BONE	324	6			
<b>RESPIRATORY SYSTEM</b>					
TRACHEA	419	8			
LUNG	524	10			
bronchiolar/alveolar adenoma			94	17.94	9.72-28.00
bronchiolar/alveolar carcinoma			58	11.07	1.92-20.00
sarcoma (unknown origin)			1	0.19	0-1.39
pleural mesothelioma			1	0.19	0-1.92
<b>CIRCULATORY SYSTEM</b>					
HEART	522	10			
AORTA	416	8			
hemangiosarcoma			1	0.24	0-2.00

Table C 1 (Cont.)

LOCATION & TUMOR	No. Tissues Examined	No. Study Groups	Total No. Tumors	Mean Percent	Range Percent
<b>DIGESTIVE SYSTEM</b>					
SALIVARY GLAND	523	10			
ESOPHAGUS	518	10			
STOMACH	515	10			
squamous cell carcinoma			1	0.19	0-2.00
SMALL INTESTINE	386	8			
polyp (B)			1	0.26	0-2.17
COLON/CECUM	501	10			
intestinal carcinoma			1	0.20	0-1.41
LIVER	521	10			
acidophilic focus/area			7	1.34	0-4.08
basophilic focus/area			21	4.03	0-10.00
focus of alteration, mixed cell			1	0.19	0-2.00
clear cell focus/area			5	0.96	0-6.00
bile duct proliferation			1	0.19	0-1.39
nodular hepatocellular proliferation			6	1.15	0-6.00
hepatocellular adenoma			97	18.62	4.08-37.5
hepatocellular carcinoma			68	13.05	0-28.00
carcinoma/adenoma			3++	0.58	0-6.00
hemangioma			5	0.96	0-4.00
hemangiosarcoma			11	2.11	0-8.0
cholangioma			8++	1.54	0-16.00
GALL BLADDER	421	9			
papilloma (B)			1	0.24	0-2.13
PANCREAS (EXOCRINE)	517	10			
<b>URINARY SYSTEM</b>					
KIDNEY	521	10			
renal cell adenoma			7	1.34	0-4.26
renal cell carcinoma			5	0.96	0-2.13
URINARY BLADDER	514	10			
<b>REPRODUCTIVE SYSTEM</b>					
TESTIS	524	10			
Rete Testis papilloma			2++	0.38	0-4.00
interstitial cell tumor (B)			10	1.91	0-6.12
interstitial cell tumor (NOS)			3++	0.57	0-5.77
papillary adenoma (B)			2++	0.38	0-4.08
mesothelioma (NOS)			1	0.19	0-1.92
PROSTATE	505	10			
SEMINAL VESICLES	431	10			
sarcoma			1	0.23	0-2.08
fibrosarcoma			1	0.23	0-2.00

**Table CI (Cont.)**

LOCATION & TUMOR	No. Tissues Examined	No. Study Groups	Total No. Tumors	Mean Percent	Range Percent
<b>ENDOCRINE SYSTEM</b>					
PANCREAS (ENDOCRINE)	517	10			
islet cell adenoma			2	0.39	0-2.08
pancreatic duct adenocarcinoma			1	0.19	0-2.00
PITUITARY GLAND	479	10			
adenoma			4	0.84	0-4.55
carcinoma			1	0.21	0-2.27
THYROID GLAND	511	10			
follicular cell adenoma			3	0.59	0-4.08
PARATHYROID GLAND	353	10			0-6.00
ADRENAL GLAND	509	10			
cortical adenoma			8	1.57	0-4.00
pheochromocytoma (NOS)			1	0.20	0-1.92
pheochromocytoma (B)			1	0.20	0-2.22
subcapsular cell adenoma			1	0.20	0-2.22
spindle cell fibroma			1	0.20	0-2.13
<b>NERVOUS SYSTEM</b>					
SPINAL CORD	350	7			
oligodendroglioma			1	0.29	0-2.00
ganglioneuroma			1	0.29	0-2.00
schwannoma (M)			1	0.29	0-2.04
BRAIN	518	10			
ependymoma (M)			1	0.21	0-2.00
PERIPHERAL NERVES	516	10			
<b>SPECIAL SENSES</b>					
EYE AND ADNEXA*	409	8			
adenoma, accessory			5	1.22	0-8.16
HARDERIAN GLAND	172	3			
adenoma			22	12.79	0-18.06 <sup>^</sup>
<b>BODY CAVITIES</b>					
THORACIC CAVITY	+				
mesothelioma (M)			1		

\* accessory gland could be Harderian or lacrimal; all found in groups in which gland was not on tissue list to be examined

<sup>^</sup> 5 additional adenomas were found in study groups in which Harderian gland not on tissue list to be examined

<sup>^^</sup> number animals examined

+ gross lesions not reported elsewhere

++ all found in one study group

**Table C2**  
**NEOPLASMS**  
**24 MONTH STUDIES**  
**FEMALE CD-1<sup>®</sup> MICE**

Location & Tumor	No. Tissues Examined	No. Study Groups	Total No. Tumors	Mean Percent	Range Percent
<b>LOCATION &amp; TUMOR</b>					
<b>HEMATOPOIETIC SYSTEM</b>					
LYMPH NODES	553	11			
hemangiosarcoma			1	0.18	0-1.92
THYMUS	505	11			
thymic lymphoma			2++	0.40	0-2.99
hemangiosarcoma			6	1.19	0-6.82
BONE MARROW	338	7			
SPLEEN	573	11			
hemangioma			2	0.35	0-1.96
hemangiosarcoma			8	1.40	0-6.00
LYMPHORETICULAR TUMORS	425 <sup>^^</sup>	8			
malignant lymphoma (NOS)			57	13.41	0-28.00
malignant lymphoma, lymphocytic			10++	2.35	0-19.61
malignant lymphoma, mixed			2++	0.47	0-3.92
myeloid leukemia			1	0.24	0-1.92
histiocytic sarcoma			16	3.76	0-10.00
<b>INTEGUMENTARY SYSTEM</b>					
SKIN/SUBCUTIS	575	11			
papilloma			1	0.17	0-2.00
sarcoma			7	1.22	0-3.92
hemangioma			1	0.17	0-1.96
hemangiosarcoma			4	0.70	0-4.00
chondrosarcoma			1	0.17	0-1.39
myxoma (B)			1	0.17	0-2.00
subcutaneous osteosarcoma			1	0.17	0-2.00
MAMMARY GLAND	549	11			
adenocanthoma			3++	0.55	0-4.23
adenoma			1	0.18	0-2.00
carcinoma			25	4.55	0-12.20
<b>MUSCULOSKELETAL SYSTEM</b>					
SKELETAL MUSCLE	496	10			
BONE	374	7			
osteoma			2	0.45	0-2.00
osteosarcoma			3	0.60	0-4.00
<b>RESPIRATORY SYSTEM</b>					
TRACHEA	464	9			
LUNG	572	11			
bronchiolar/alveolar adenoma			56	9.79	4.00-18.37
bronchiolar/alveolar carcinoma			38	6.64	0-13.46
hemangiosarcoma			1	0.17	0-2.00

**Table C2 (Cont.)**

Location & Tumor	No. Tissues Examined	No. Study Groups	Total No. Tumors	Mean Percent	Range Percent
<b>CIRCULATORY SYSTEM</b>					
<b>VASCULAR SYSTEM</b>					
	+				
hemangiosarcoma			1		
hemangioma			1		
intercostal hemangiosarcoma			1		
<b>HEART</b>					
hemangiosarcoma	574	11	1	0.17	0-1.92
<b>AORTA</b>					
hemangioma	415	8	1	0.29	0-2.04
hemangiosarcoma			2	0.58	0-4.08
<b>DIGESTIVE SYSTEM</b>					
<b>SALIVARY GLAND</b>					
	572	11			
<b>ESOPHAGUS</b>					
	570	11			
<b>STOMACH</b>					
	568	11			
squamous cell papilloma			1	0.18	0-2.00
<b>SMALL INTESTINE</b>					
	456	9			
adenomatous polyp			1	0.22	0-2.08
adenocarcinoma			2	0.44	0-2.08
hemangiosarcoma			1	0.22	0-2.13
<b>COLON/CECUM</b>					
	484	11			
leiomyoma, cecum			1	0.21	0-2.08
<b>LIVER</b>					
	571	11			
acidophilic focus/area			4	0.70	0-2.00
focus of alteration-mixed cell			1	0.18	0-2.00
basophilic focus/area			2	0.35	0-2.04
hepatocellular adenoma			18	3.15	0-11.27
hepatocellular carcinoma			9	1.58	0-4.00
hemangioma			4	0.70	0-2.04
hemangiosarcoma			3	0.53	0-2.00
<b>GALL BLADDER</b>					
	488	10			
<b>PANCREAS (EXOCRINE)</b>					
	523	11			
<b>URINARY SYSTEM</b>					
<b>KIDNEY</b>					
	582	11			
renal cell adenoma			3	0.52	0-4.00
renal cell carcinoma			1	0.17	0-2.00
<b>URINARY BLADDER</b>					
	560	11			
<b>REPRODUCTIVE SYSTEM</b>					
<b>OVARY</b>					
	568	11			
cystadenoma			11	1.94	0-6.12
granulosa/theca cell tumor			11	1.94	0-6.00
granulosa cell tumor (M)			2	0.35	0-2.00
adenoma, fallopian tube (69 exam.)			2	0.35	0-2.90
interstitial cell tumor (B)			1	0.18	0-2.08
hemangiosarcoma			2	0.35	0-2.04
Sertoli cell tumor (B)			1	0.18	0-2.04
mesothelioma			1	0.18	0-1.92
stromal cell tumor			1	0.18	0-0.44

**Table C2 (Cont.)**

Location & Tumor	No. Tissues Examined	No. Study Groups	Total No. Tumors	Mean Percent	Range Percent
<b>REPRODUCTIVE SYSTEM (Cont.)</b>					
UTERUS/CERVIX	572	11			
endometrial adenoma			1	0.17	0-1.41
adenocarcinoma			7	1.22	0-6.00
endometrial stromal polyp			35	6.12	0-22.00
endometrial stromal sarcoma			14	2.45	0-14.00
fibroma			2	0.35	0-2.00
leiomyoma			13	2.27	0-8.00
leiomyosarcoma			12	2.10	0-9.80
hemangioma			2	0.35	0-2.00
hemangiosarcoma			9	1.57	0-6.00
<b>ENDOCRINE SYSTEM</b>					
PANCREAS (ENDOCRINE)	573	11			
islet cell adenoma			2	0.35	0-2.00
PITUITARY GLAND	544	11			
adenoma			21	3.86	0-8.00
craniopharyngeal cyst carcinoma			1	0.18	0-2.04
THYROID GLAND	565	11			
follicular cell adenoma			2	0.35	0-2.00
follicular cell carcinoma			2	0.35	0-2.08
PARATHYROID GLAND	359	11			
ADRENAL GLAND	569	11			
cortical adenoma			3	0.53	0-2.00
pheochromocytoma (B)			2	0.35	0-2.08
<b>NERVOUS SYSTEM</b>					
SPINAL CORD	431	8			
BRAIN	575	11			
PERIPHERAL NERVES	517	10			
schwannoma			1	0.19	0-2.08
<b>SPECIAL SENSES</b>					
EYE AND ADNEXA	468	9			
cataract			25	5.34	0-28.00
adenoma, accessory gland			6*		
HARDERIAN GLAND	222	4			
adenoma			11	4.95	0-6.94 <sup>A</sup>
adenocarcinoma			1	0.45	0-2.04

\* accessory gland could be Harderian or lacrimal If Harderian, they were found in groups in which gland was not on tissue list to be examined

+ gross lesions not reported elsewhere

++ all found in one study group

<sup>A</sup> 2 additional found in group in which Harderian gland not on tissue list to be examined not on tissue list to be examined

<sup>AA</sup> number animals examined

Table C3  
LIVER NEOPLASMS BY STUDY GROUP  
24 MONTH STUDIES  
MALE

Study Code	CQ	CR	DZ	CP	BX	DN	DX	CX	DU	EG
No. tissues examined	50	50	49	50	52	48	50	72	50	50
acidophilic focus/area		2	2		1				2	
%		4.00	4.08		1.92				4.00	
focus of alteration, mixed cell									1	
%									2.00	
clear cell focus/area							3	2		
%							6.00	2.78		
basophilic focus/area	2	3	1		3	2	3	1	5	1
%	4.00	6.00	2.04		5.77	4.17	6.00	1.39	10.00	2.00
nodular hepatocellular proliferation	3	2		1						
%	6.00	4.00		2.00						
hepatocellular adenoma	9	7	2	9	6	10	9	27	9	9
%	18.00	14.00	4.08	18.00	11.54	20.83	18.00	37.50	18.00	18.00
hepatocellular carcinoma	14		8	1	9	4	8	12	7	5
%	28.00		16.33	2.00	17.31	8.33	16.00	16.67	14.00	10.00
carcinoma/adenoma				3						
%				6.00						
hemangioma	2			1	1				1	
%	4.00			2.00	1.92				2.00	
hemangiosarcoma	2	4				3			2	
%	4.00	8.00				6.25			4.00	
cholangioma		8								
%		16.00								

FEMALE

Study Code	CQ	CR	DZ	CP	BX	DN	DX	CX	DU	EG	CV
No. tissues examined	50	50	49	51	52	49	50	71	50	49	50
eosinophilic focus	1	1		1	1						
%	2.00	2.00		1.96	1.92						
focus of alteration-mixed cell									1		
%									2.00		
basophilic focus					1	1					
%					1.92	2.04					
hepatocellular adenoma	1	1			2	1	1	8		3	1
%	2.00	2.00			3.85	2.04	2.00	11.27		6.12	2.00
hepatocellular carcinoma	1	2		1	1		1		2	1	
%	2.00	4.00		1.96	1.92		2.00		4.00	2.04	
hemangioma					1	1			1		1
%					1.92	2.04			2.00		2.00
hemangiosarcoma	1							1			1
%	2.00							1.41			2.00

Table C4  
LUNG NEOPLASMS BY STUDY GROUP  
24 MONTH STUDIES  
MALE

Study Code	CQ	CR	DZ	CP	BX	DN	DX	CX	DU	EG
No. tissues examined	50	50	50	51	52	49	50	72	50	50
bronchiolar/alveolar adenoma	8	8	9	7	12	9	9	7	11	14
%	16.00	16.00	18.00	13.73	23.08	18.37	18.00	9.72	22.00	28.00
bronchiolar/alveolar carcinoma	5	4	8	1	1	6	10	10	8	5
%	10.00	8.00	16.00	1.96	1.92	12.24	20.00	13.89	16.00	10.00
sarcoma (unknown origin)								1		
%								1.39		
pleural mesothelioma					1					
%					1.92					

FEMALE

Study Code	CQ	CR	DZ	CP	BX	DN	DX	CX	DU	EG	CV
No. tissues examined	50	49	50	51	52	49	50	71	50	50	50
bronchiolar/alveolar adenoma	6	4	2	5	5	9	7	5	4	5	4
%	12.00	8.16	4.00	9.80	9.62	18.37	14.00	7.04	8.00	10.00	8.00
bronchiolar/alveolar carcinoma		2	5	3	7	2	3	7	5	1	3
%		4.08	10.00	5.88	13.46	4.08	6.00	9.86	10.00	2.00	6.00
hemangiosarcoma	1										
%	2.00										



Table C5  
 LYMPHORETICULAR NEOPLASMS BY STUDY GROUP  
 24 MONTH STUDIES  
 MALE

Study Code	CQ	CR	DZ	CP	BX	DN	DX	CX	DU	EG
No. animals examined	---		50	50	52	49	50	72	50	50
malignant lymphoma (NOS)			6	1	2	3	4	6	3	
%			12.00	2.00	3.85	6.12	8.00	8.33	6.00	
malignant lymphoma, lymphocytic				2						
%				4.00						
malignant lymphoma, mixed				1						
%				2.00						
histiocytic sarcoma				3	4	1				
%				6.00	7.69	2.04				
mast cell tumor						1				
%						2.04				

FEMALE

Study Code	CQ	CR	DZ	CP	BX	DN	DX	CX	DU	EG	CV
No. tissues examined	----	----	50	51	52	50	50	72	50	50	----
malignant lymphoma			6	1	4	12	14	12	5	3	
%			12.00	1.96	7.69	24.00	28.00	16.67	10.00	6.00	
malignant lymphoma, lymphocytic				10							
%				19.61							
malignant lymphoma, mixed				2							
%				3.92							
myeloid leukemia					1						
%					1.92						
histiocytic sarcoma				2	2	3			5	4	
%				3.92	3.85	6.00			10.00	8.00	

FIGURE A1  
MALE - SURVIVAL AT 18 MONTHS

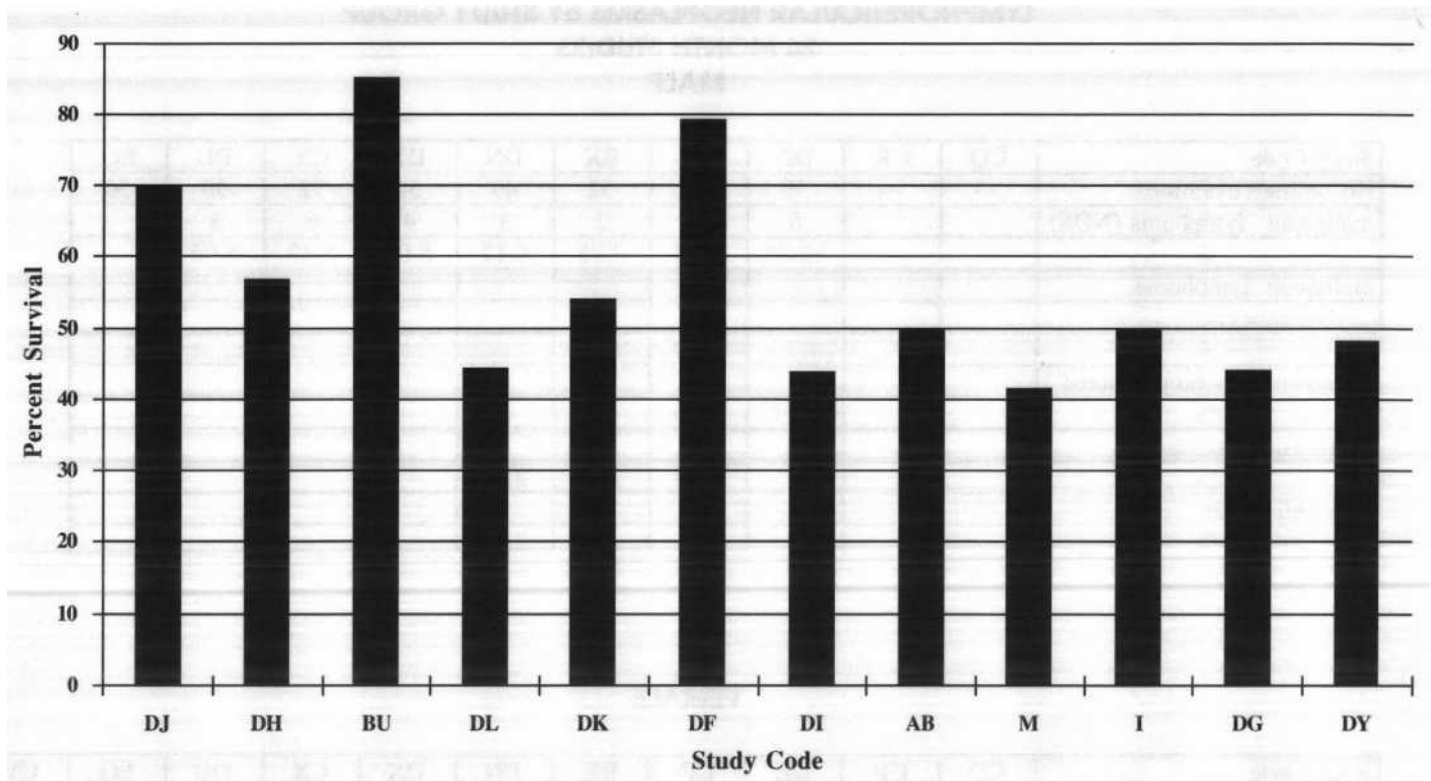


FIGURE A2  
FEMALE - SURVIVAL AT 18 MONTHS

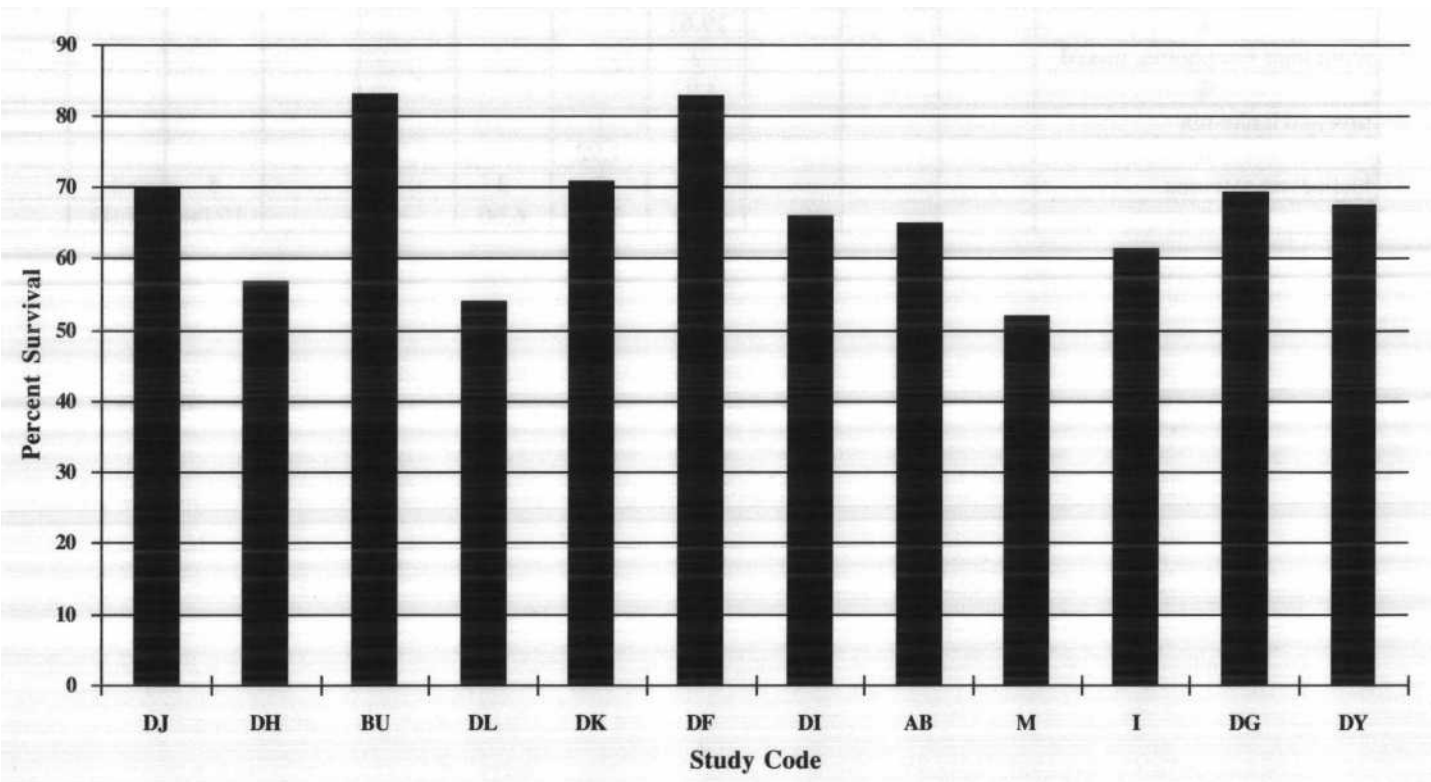


FIGURE B1  
MALE - SURVIVAL AT 21 MONTHS

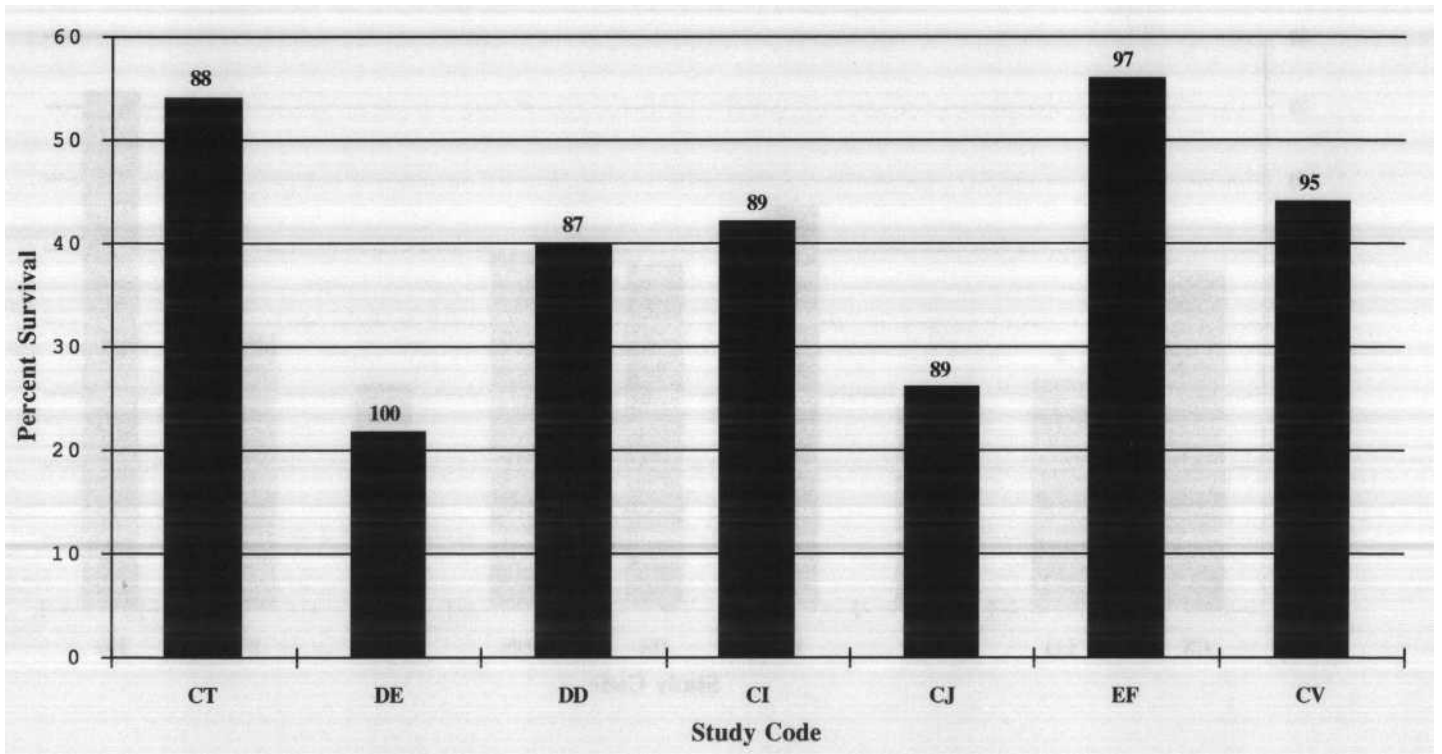
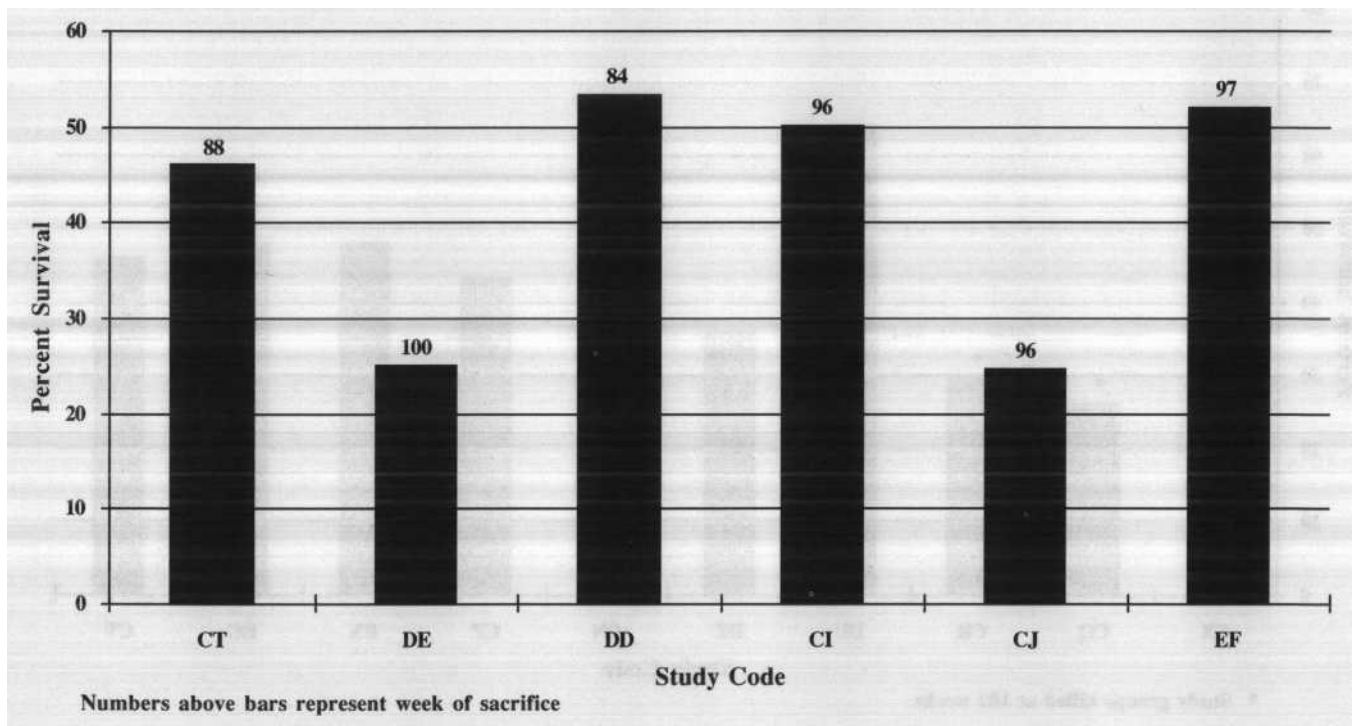


FIGURE B2  
FEMALE - SURVIVAL AT 21 MONTHS



C1 FIGURE  
MALE - SURVIVAL AT 24 MONTHS

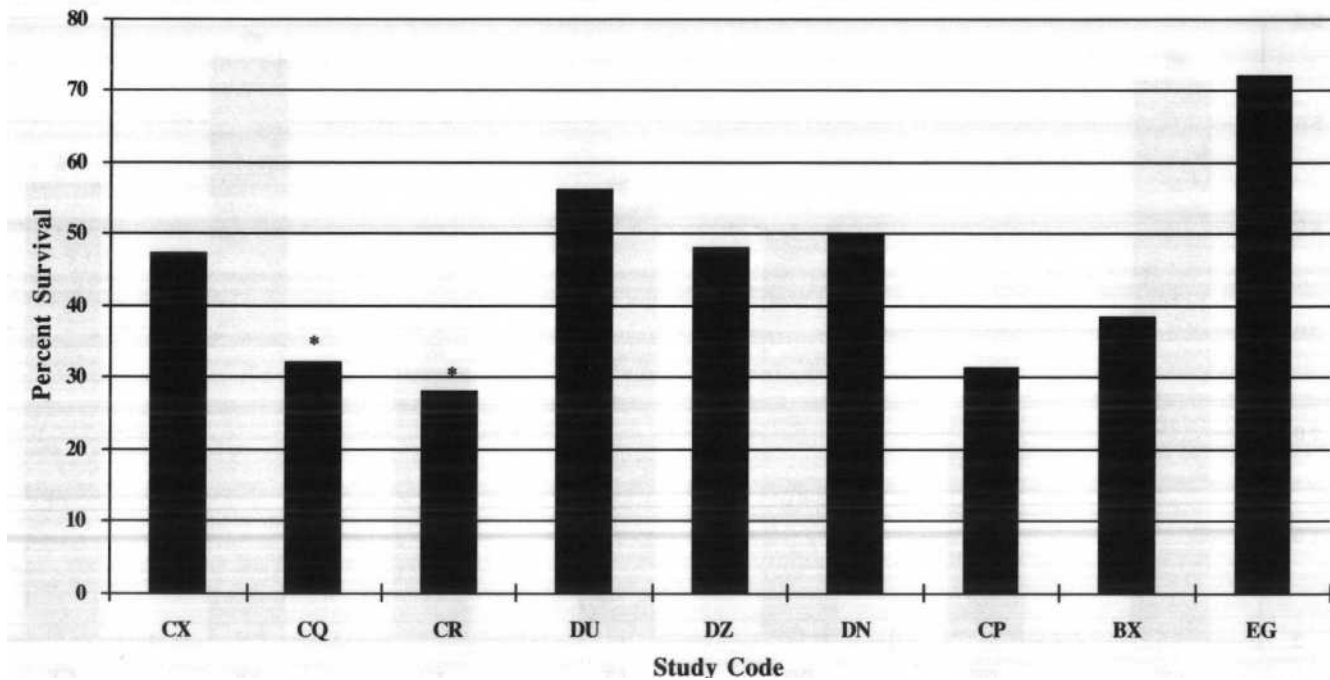


FIGURE C2  
FEMALE - SURVIVAL AT 24 MONTHS

