

9. MITOTIC INDEXES: MAMMALIAN AND AMPHIBIAN TISSUES

Mitoses per 1000 Cells are numbers of cells observed microscopically in various stages of mitoses per 1000 cells in a fresh tissue preparation except for those entries in which Drug & Time are specified. Where Drug & Time are included, the indicated drug, C = colchicine, or D = demecolcine (Colcemid), is administered the specified number of

hours before sacrifice, and the number of cells which have entered and been arrested in metaphase during that time are counted per 1000 cells. Data in brackets refer to the column heading in brackets. Values in parentheses are ranges, estimate "b" unless otherwise indicated (see Introduction).

	Tissue	Species	Specification	Time of Day <sup>1/</sup> hr	Mitoses per 1000 Cells [Drug & Time]	Reference	
1	Eye						
2	Epithelium, cornea	<i>Rattus norvegicus</i>	♂, adult	.....	145 [C, 24 hr <sup>2/</sup> ]	7	
3				2200	36 [C, 6 hr]		
4				0400	33 [C, 6 hr]		
5				1000	39 [C, 6 hr]		
6				1600	32 [C, 6 hr]		
7				Wistar strain	.....	6.2	45
8		<i>Ambystoma maculatum</i> <sup>3/</sup>	Larva; length, 20-25 mm	Daily mean	4.86	42	
9				0300	3.32		
10	lens	<i>Rattus norvegicus</i>	Osborn-Mendel strain, ♂			54	
11				2 wk old	1100		2.7 [3 hr]
12				4 wk old	1100		2.0 [3 hr]
13				6 wk old	1100		1.6 [3 hr]
14				8 & 10 wk old	1100		1.4 [3 hr]
15				14 wk old	1100		1.3 [3 hr]
16				18 wk old	1100		1.0 [3 hr]
17				26 wk old	1100		0.8 [3 hr]
18	Digestive system Lip	<i>Rattus norvegicus</i>	Sprague-Dawley strain, ♂, adult	.....	74 [C, 24 hr <sup>2/</sup> ]	4	
19				2200	26 [C, 6 hr]		
20				0400	5 [C, 6 hr]		
21				1000	9 [C, 6 hr]		
22				1600	34 [C, 6 hr]		
23	Buccal mucosa	<i>Homo sapiens</i>	♂♀, adult	1800	23.9 [D, 5-8 hr]	50	
24		<i>Oryctolagus cuniculus</i>	New Zealand White strain, 3.5 mo old	24-hr mean	5.1(3.8-7.2) <sup>c</sup>	25	
25		<i>Rattus norvegicus</i>	Sprague-Dawley strain, ♂, adult	.....	230 [C, 24 hr <sup>2/</sup> ]	4	
26				2200	40 [C, 6 hr]		
27				0400	40 [C, 6 hr]		

<sup>1/</sup> Unless otherwise specified. <sup>2/</sup> Calculated from four 6-hr values. <sup>3/</sup> Synonym: *A. punctatum*.

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9. MITOTIC INDEXES: MAMMALIAN AND AMPHIBIAN TISSUES

Tissue	Species	Specification	Time of Day <sup>1/</sup> hr	Mitoses per 1000 Cells [Drug & Time]	Reference
28			1000	67 [C, 6 hr]	
29			1600	83 [C, 6 hr]	
30	Cheek pouch	<i>Mesocricetus auratus</i> Chinese strain, ♂, 6 mo old	.....	0.16	34
	Maxillary incisor				
31	Internal enamel epithelium	<i>Rattus norvegicus</i> Wistar strain, birth-76 da old	.....	13.3(11.5-15.7) <sup>c</sup>	19
32	Preodontoblast layer	<i>Rattus norvegicus</i> Wistar strain, birth-76 da old	.....	18.7(16.9-20.6) <sup>c</sup>	19
33	Tongue	<i>Mus musculus</i> ♂, 25 da old; body wt, 10 g	.....	10.8	2
34	Superior surface	<i>Rattus norvegicus</i> Sprague-Dawley strain, ♂, adult	.....	203 [C, 24 hr <sup>2/</sup> ]	4
35			2200	31 [C, 6 hr]	
36			0400	27 [C, 6 hr]	
37			1000	72 [C, 6 hr]	
38			1600	73 [C, 6 hr]	
39	Parotid gland, acinar cells	<i>Rattus norvegicus</i> Long-Evans strain, ♀, 6 mo old	.....	0.02	44
40	Submaxillary gland	<i>Rattus norvegicus</i> Wistar strain, ♂, 28 da old	.....	(0.2-1.2) <sup>c4/</sup>	12
41	Palate	<i>Mus musculus</i> ♂, 25 da old; body wt, 10 g	.....	9.4	2
42	Esophagus	<i>Rattus norvegicus</i> Sprague-Dawley strain, ♂, adult	.....	118 [C, 24 hr <sup>2/</sup> ]	4
43			2200	31 [C, 6 hr]	
44			0400	27 [C, 6 hr]	
45			1000	14 [C, 6 hr]	
46			1600	46 [C, 6 hr]	
	Stomach				
47	Forestomach	<i>Rattus norvegicus</i> Wistar strain, ♂, 2 mo old	.....	6.7(4.1-9.3)	51
48	Body	<i>Homo sapiens</i> ♂♀, adult	.....	22.2	49
49		<i>Rattus norvegicus</i> Sprague-Dawley strain, adult	.....	106 [C, 24 hr <sup>2/</sup> ]	48
50	Cardia	<i>Rattus norvegicus</i> Sprague-Dawley strain, ♂, adult	.....	110 [C, 24 hr <sup>2/</sup> ]	4
51			2200	25 [C, 6 hr]	
52			0400	25 [C, 6 hr]	
53			1000	30 [C, 6 hr]	
54			1600	30 [C, 6 hr]	
55	Gastric mucosa	<i>Ambystoma maculatum</i> <sup>3/</sup> Larva, pond animal	Daily mean	4.64	17
56			0230	7.02	
57			0830	2.89	
58		laboratory animal	Daily mean	0.58	
59			0630	0.11	
60			1230	1.09	
61	Pylorus	<i>Homo sapiens</i> ♂♀, adult	.....	26.5	49
62		<i>Rattus norvegicus</i> Sprague-Dawley strain, adult	.....	22.5 [C, 4 hr]	48
	Mucosal epithelium				
63	Surface	<i>Rattus norvegicus</i> .....	.....	86 [C, 4 hr]	32
64	Glandular	<i>Rattus norvegicus</i> .....	.....	94 [C, 4 hr]	32
65	Liver	<i>Rattus norvegicus</i> Wistar strain, ♂, 24 da old	0400	2.1(1.1-3.0)	26
66			0800	13.1(6.9-19.3)	
67			1200	10.3(7.4-13.2)	
68			1600	4.95(3.5-6.4)	
69			2000	2.7(1.5-3.8)	
70		<i>Ambystoma maculatum</i> <sup>3/</sup> Larva, pond animal	Daily mean	11.8	18
71			0630	11.7	
72			1830	12.3	
73		laboratory animal	Daily mean	7.2	
74			0630	2.8	
75			1830	10.2	

<sup>1/</sup> Unless otherwise specified. <sup>2/</sup> Calculated from four 6-hr values. <sup>3/</sup> Synonym: *A. punctatum*. <sup>4/</sup> Diurnal variation.

continued

9. MITOTIC INDEXES: MAMMALIAN AND AMPHIBIAN TISSUES

	Tissue	Species	Specification	Time of Day hr	Mitoses per 1000 Cells [Drug & Time]	Ref- erence	
76	Intestine	<i>Mus musculus</i>	CF <sub>1</sub> strain, ♀, 8-16 wk old	.....	9.3(8.5-10.1)	30	
77		<i>Rana temporaria</i>	Tadpole, at metamorphosis	.....	6	16	
78	Duodenum	<i>Homo sapiens</i>	♂♀, adult	.....	26.3	49	
79					29.2	9	
80		<i>Felis catus</i>	Adult, healthy	1500	8.8(7.3-9.5) <sup>c</sup>	36	
81		<i>Rattus norvegicus</i>	Sprague-Dawley strain, ♀ Young; body wt, 50-90 g	.....	31.2(28.5-34.1) <sup>c</sup>	33	
82		Adult; body wt, 230-260 g	.....	30.7			
83	Jejunum	<i>Rattus norvegicus</i>	Sprague-Dawley strain, ♂, adult	.....	790 [24 hr]	4	
84				1600	39		
85				2200	39		
86				0400	35		
87				1000	35		
88	Crypts (only)	<i>Homo sapiens</i>	Infant, normal	1100-1200	39.0	13	
89		<i>Rattus norvegicus</i>	Sprague-Dawley strain	.....	13.7(11.6-15.8)	55	
90	Ileum	<i>Felis catus</i>	Adult, healthy	1500	9.5(8.0-10.4) <sup>c</sup>	36	
91		<i>Rattus norvegicus</i>	Sprague-Dawley strain, ♀ Young; body wt, 50-90 g	.....	34.1(29.0-42.8) <sup>c</sup>	33	
92		Adult; body wt, 230-260 g	.....	34.9			
93	Colon	<i>Rattus norvegicus</i>	Sprague-Dawley strain, ♂, adult	.....	100 [C, 24 hr <sup>2/</sup> ]	4	
94				2200	26 [C, 6 hr]		
95				0400	24 [C, 6 hr]		
96				1000	26 [C, 6 hr]		
97				1600	24 [C, 6 hr]		
98	Rectum	<i>Rattus norvegicus</i>	Sprague-Dawley strain, ♂, adult	.....	161 [C, 24 hr <sup>2/</sup> ]	4	
99				2200	39 [C, 6 hr]		
100				0400	41 [C, 6 hr]		
101				1000	41 [C, 6 hr]		
102				1600	40 [C, 6 hr]		
103	Epithelium	<i>Homo sapiens</i>	♂, 68 yr old	.....	12.5	21	
104	Anus	<i>Rattus norvegicus</i>	Sprague-Dawley strain, ♂, adult	.....	250 [C, 24 hr <sup>2/</sup> ]	4	
105				2200	61 [C, 6 hr]		
106				0400	42 [C, 6 hr]		
107				1000	60 [C, 6 hr]		
108				1600	87 [C, 6 hr]		
109	Lung	<i>Mus musculus</i>	A strain, ♂, 3 mo old	.....	5.25 [D, 4 hr]	46	
110				12 mo old	.....		3.53 [D, 4 hr]
111				24 mo old	.....		4.09 [D, 4 hr]
112			♀, 3 mo old	.....	5.22 [D, 4 hr]		
113				12 mo old	.....		8.40 [D, 4 hr]
114				24 mo old	.....		7.98 [D, 4 hr]
115			C57BL strain, ♂, 3 mo old	.....	1.76 [D, 4 hr]		
116				12 mo old	.....		0.86 [D, 4 hr]
117				24 mo old	.....		0.70 [D, 4 hr]
118			♀, 3 mo old	.....	3.48 [D, 4 hr]		
119	12 mo old	.....		0.92 [D, 4 hr]			
120	24 mo old	.....		0.34 [D, 4 hr]			
121	Alveolar tissue	<i>Rattus norvegicus</i>	Sprague-Dawley strain, ♂, adult	.....	43 [C, 24 hr <sup>2/</sup> ]	5	
122				1600	11 [C, 6 hr]		
123				2200	12 [C, 6 hr]		
124				0400	10 [C, 6 hr]		
125			1000	10 [C, 6 hr]			

<sup>2/</sup> Calculated from four 6-hr values.

continued

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	Tissue	Species	Specification	Time of Day hr	Mitoses per 1000 Cells [Drug & Time]	Ref- er- ence	
126	Reticuloendothelial system Bone marrow	<i>Homo sapiens</i>	♂, young normal, 29-45 yr old	1000-1300	9.0(7-11) <sup>5/</sup>	22	
127				.....	8.8(8.0-10.3) <sup>c5/</sup>	27	
128		<i>Mus musculus</i>	.....	0400	22.6	37	
129				1200	11.5		
130				1600	14.0		
131				2400	12.8		
132		<i>Rattus norvegicus</i>	Hooded strain, ♂; body wt, 150-180 g	.....	56 [C, 6 hr]	39	
133				Sprague-Dawley strain, ♀; body wt, 190-210 g	0600		58 [C, 4 hr]
134					1000		130 [C, 4 hr]
135					1400		110 [C, 4 hr]
136					1800		58 [C, 4 hr]
137					2200		70 [C, 4 hr]
138	0200	40 [C, 4 hr]					
139	Erythrocytic series	<i>Mus musculus</i>	CF <sub>1</sub> strain, ♀, 8-16 wk old	.....	5.0(3.6-6.4)	30	
140		<i>Rattus norvegicus</i>	Sprague-Dawley strain, ♂	.....	6.5(5.7-7.3)	55	
141	Basophilic normoblast	<i>Homo sapiens</i>	♂, normal, 29-45 yr old	.....	1.729 <sup>6/</sup>	28	
142	Polychromic normoblast	<i>Homo sapiens</i>	♂, normal, 29-45 yr old	.....	3.998 <sup>6/</sup>	28	
143	Proerythroblast	<i>Homo sapiens</i>	♂, normal, 29-45 yr old	.....	0.422 <sup>6/</sup>	28	
144	Erythroblast	<i>Notophthalmus viridescens</i> <sup>2/</sup>	.....	.....	25(23-27)	24	
145	Reticulocyte	<i>Notophthalmus viridescens</i> <sup>2/</sup>	.....	.....	12(10-14)	24	
146	Myelocytic series	<i>Mus musculus</i>	CF <sub>1</sub> strain, ♀, 8-16 wk old	.....	3.8(3.0-4.6)	30	
147		<i>Rattus norvegicus</i>	Sprague-Dawley strain, ♂	.....	13.2(11.8-12.6)	55	
148	Myeloblast	<i>Homo sapiens</i>	♂, normal, 29-45 yr old	.....	0.249	28	
149	Promyelocyte	<i>Homo sapiens</i>	♂, normal, 29-45 yr old	.....	0.498	28	
150	Myelocyte	<i>Homo sapiens</i>	♂, normal, 29-45 yr old	.....	1.778	28	
151	Lymph nodes	<i>Felis catus</i>	Kitten, 3 da old	0230	16	23	
152				1030	5		
153				1430	6		
154				2230	28		
155		<i>Mus musculus</i>	CF <sub>1</sub> strain, ♀, 8-16 wk old	.....	6.7(5.1-8.1) <sup>c</sup>	30	
156		<i>Rattus norvegicus</i>	Albino, young adult; body wt, 200 g	.....	2.0(1.0-3.0)	29	
157	Spleen	<i>Felis catus</i>	Kitten, 3 da old	0230	4	23	
158				1030	1		
159				1430	10		
160				2230	4		
161		<i>Ambystoma maculatum</i> <sup>3/</sup>	Larva	.....	15.9	18	
162	Lymphoid areas	<i>Rattus norvegicus</i>	Albino, young adult; body wt, 200 g	.....	40	29	
163	Thymus	<i>Felis catus</i>	Kitten, 3 da old	0230	26	23	
164				1030	7		
165				1430	22		
166				2230	17		

<sup>3/</sup> Synonym: *A. punctatum*. <sup>5/</sup> In tissue obtained by sternal puncture. <sup>6/</sup> In tissue from iliac bone. <sup>2/</sup> Synonym: *Triturus viridescens*.

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	Tissue	Species	Specification	Time of Day hr	Mitoses per 1000 Cells [Drug & Time]	Refer- ence
167		<i>Rattus norvegicus</i>	Sprague-Dawley strain; body wt, 100-150 g	.....	28 [C, 6 hr]	38
	Cortex					
168	Reticular cells	<i>Rattus norvegicus</i>	Young adult	.....	15	40
169	Lymphocytes, large	<i>Rattus norvegicus</i>	Young adult	.....	65	40
170	medium	<i>Rattus norvegicus</i>	Young adult	.....	131	40
171	small	<i>Rattus norvegicus</i>	Young adult	.....	15	40
172	Kidney	<i>Mus musculus</i>	Strain A, ♂, 4-6 mo old	.....	6	1
	Reproductive system					
173	Prostate gland	<i>Mus musculus</i>	BALB/c strain, 3 wk old	.....	37.9 [D, 4 hr]	47
174			6 wk old	.....	2.66 [D, 4 hr]	
175			14 wk old	.....	0.21 [D, 4 hr]	
176			24 wk old	.....	0.12 [D, 4 hr]	
177			44 wk old	.....	0.01 [D, 4 hr]	
178			80-93 wk old	.....	0.08 [D, 4 hr]	
179			C57BL strain, 6 mo old	.....	0.41 [D, 4 hr]	
180			Swiss-Hooper strain, 6 mo old	.....	0.09 [D, 4 hr]	
	Ovary, germinal epithelium	<i>Rattus norvegicus</i>	Sprague-Dawley strain, ♀, adult			8
181			Proestrus	1600	6 [6 hr]	
182			Estrus I	1600	8 [6 hr]	
183			Estrus II	1600	7 [6 hr]	
184			Metestrus	1600	8 [6 hr]	
185			Diestrus I	1600	6 [6 hr]	
186			Diestrus II	1600	10 [6 hr]	
	Uterus, tube	<i>Rattus norvegicus</i>	Sprague-Dawley strain, ♀, adult			8
187			Proestrus	1600	5 [6 hr]	
188			Estrus I	1600	7 [6 hr]	
189			Estrus II	1600	7 [6 hr]	
190			Metestrus	1600	6 [6 hr]	
191			Diestrus I	1600	7 [6 hr]	
192			Diestrus II	1600	6 [6 hr]	
	endometrium, surface epithelium	<i>Rattus norvegicus</i>	Sprague-Dawley strain, ♀, adult			8
193			Proestrus	.....	65 [6 hr]	
194			Estrus I	.....	33 [6 hr]	
195			Estrus II	.....	18 [6 hr]	
196			Metestrus	.....	32 [6 hr]	
197			Diestrus I	.....	57 [6 hr]	
198			Diestrus II	.....	38 [6 hr]	
	endometrial glands	<i>Rattus norvegicus</i>	Sprague-Dawley strain, ♀, adult			8
199			Proestrus	.....	5 [6 hr]	
200			Estrus I	.....	9 [6 hr]	
201			Estrus II	.....	4 [6 hr]	
202			Metestrus	.....	66 [6 hr]	
203			Diestrus I	.....	37 [6 hr]	
204			Diestrus II	.....	21 [6 hr]	
	cervix	<i>Rattus norvegicus</i>	Sprague-Dawley strain, ♀, adult			8
205			Proestrus	.....	34 [6 hr]	
206			Estrus I	.....	29 [6 hr]	
207			Estrus II	.....	35 [6 hr]	

continued

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	Tissue	Species	Specification	Time of Day <sup>1/</sup> hr	Mitoses per 1000 Cells [Drug & Time]	Reference
208			Metestrus	.....	49 [6 hr]	
209			Diestrus I	.....	65 [6 hr]	
210			Diestrus II	.....	49 [6 hr]	
	Vagina	<i>Rattus norvegicus</i>	Sprague-Dawley strain, ♀, adult			8
211			Proestrus	.....	32 [6 hr]	
212			Estrus I	.....	119 [6 hr]	
213			Estrus II	.....	83 [6 hr]	
214			Metestrus	.....	53 [6 hr]	
215			Diestrus I	.....	46 [6 hr]	
216			Diestrus II	.....	56 [6 hr]	
217	Mammary glands	<i>Rattus norvegicus</i>	Virgin	.....	0.83	6
218			Pregnant, da 12	.....	5.4	
219			Lactating, da 12	.....	0.83	
220			Involution	.....	1.25	
221	Skeletal muscle	<i>Rattus norvegicus</i>	Sherman strain, ♂, 16 da old	0200	2.5 [C, 4 hr]	35
222				1400	1.4 [C, 4 hr]	
223			36 da old	0600	0.6 [C, 4 hr]	
224				1800	1.8 [C, 4 hr]	
	Integumentary system					
225	Skin	<i>Rana temporaria</i>	Tadpole, 3 da old	.....	13 <sup>8/</sup>	14
226			Adult	.....	10	
227	Epidermis	<i>Ambystoma maculatum</i> <sup>3/</sup>	Larva, pond animal	1430	9.1	43
228			laboratory animal	1230	0.85	
229	Abdominal	<i>Homo sapiens</i>	Newborn-20 yr old	Before 1200	0.24	52
230			21-40 yr old	Before 1200	0.37	
231			41-60 yr old	Before 1200	0.50	
232			61-80 yr old	Before 1200	0.49	
233		<i>Mus musculus</i>	White, young	0400	9.5	15
234				0800	7.0	
235				1200	6.0	
236				1600	7.5	
237				2000	15	
238				2400	14	
239		<i>Rattus norvegicus</i>	Sprague-Dawley strain, ♂			10
240			Body wt, 20 g	.....	1.56 [C, 1 hr]	
241			50 g	.....	2.45 [C, 1 hr]	
242			100 g	.....	2.75 [C, 1 hr]	
243			300 g; 17 wk old	.....	2.61 [C, 1 hr]	
244			500 g; 3 yr old	.....	2.47 [C, 1 hr]	
244	Dorsal	<i>Mus musculus</i>	Hairless, 90 da old	24-hr mean	70.2	53
245				1000	117.5	
246				2200	70.2	
247	Ear	<i>Mus musculus</i>	Hairless, 90 da old	24-hr mean	56.7	53
248				0600	97.5	
249				2000	30	
250		<i>Rattus norvegicus</i>	Sprague-Dawley strain, ♂			10
251			Body wt, 20 g	.....	1.69 [C, 1 hr]	
			50 g	.....	1.23 [C, 1 hr]	

<sup>1/</sup> Unless otherwise specified. <sup>3/</sup> Synonym: *A. punctatum*. <sup>8/</sup> No diurnal variation.

continued

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Tissue	Species	Specification	Time of Day hr	Mitoses per 1000 Cells [Drug & Time]	Ref- er- ence
252		100 g	.....	1.36 [C, 1 hr]	
253		300 g; 17 wk old	.....	1.39 [C, 1 hr]	
254		500 g; 3 yr old	.....	2.54 [C, 1 hr]	
255	<i>Mus musculus</i>	♂, adult	.....	12 <sup>2/</sup> [ 6 hr]	6
	<i>Rattus norvegicus</i>	Sprague-Dawley strain, ♂			10
256		Body wt, 20 g	.....	1.38	
257		50 g	.....	1.26	
258		100 g	.....	1.61	
259		300 g; 17 wk old	.....	1.94	
260		500 g; 3 yr old	.....	2.02	
261	<i>Homo sapiens</i>	Young adult	0400	2.0(1.55-2.55) <sup>c</sup>	41
262			0800	1.1(0.7-1.6)	
263			1200	0.9(0.6-1.2)	
264			1600	2.9(2.65-3.10)	
265			2000	1.1(1.0-1.3) <sup>c</sup>	
266			2400	6.05(5.4-6.7)	
267	<i>Mus musculus</i>	♂, adult	.....	29 <sup>2/</sup> [ 6 hr]	6
268	<i>Mus musculus</i>	♂, adult	.....	278 <sup>2/</sup> [ 6 hr]	6
269	<i>Mus musculus</i>	♂, adult	.....	55.5 <sup>2/</sup>	6
270	<i>Rattus norvegicus</i>	Sherman strain, ♂, adult	.....	5.4	3
271	<i>Mus musculus</i>	C57BL strain	1700	8.3	31
	Endocrine glands				
272	<i>Rattus norvegicus</i>	Wistar strain, ♂, 6 wk old	.....	1.3	11
273	<i>Mus musculus</i>	CF <sub>1</sub> strain, ♀, 8-16 wk old	.....	6	1

<sup>2/</sup> During anagen phase of growth.

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References

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## VOLUME I

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