

Baseline Hematology and Clinical Chemistry Values as a Function of Sex and Age for Charles River Outbred Mice:

- CrI: CD-1® (ICR)BR
- CrI: CF-1® BR

The mice used to collect these baseline data were from a Charles River virus antibody-free (VAF®) colony. These mice were free of antibody titers to the following murine viruses: MHV, Sendai, MVM, PVM, GD-VII, Reo-3, Polyoma, Ectromelia, Mouse Adenovirus, LCM, and K. Additionally, the animals were free of pathogenic endoparasites, ectoparasites and *Mycoplasma pulmonis*.

These animals were maintained in a barrier production room on hardwood bedding in polycarbonate cages. The mice were fed a pasteurized natural ingredient diet and ultrafiltered chlorinated water (3-4 ppm) *ad libitum*.

Barrier room environmental conditions were maintained at 72° ± 2°F (22° ± 0.5°C) with relative humidity at 50% ± 10%. Ventilation in the room was between 12-15 air changes per hour of 100% pre-filtered outside air, with final filtration through HEPA filters (99% efficient at 0.3 micron). The photoperiod was controlled at 12 hours of light and 12 hours of dark with no twilight transition (lights on 6:00 A M-6:00 PM; lights off 6:00 PM-6:00 AM).

Mice were not fasted prior to sample collection, and all blood samples were collected via cardiac puncture following anesthesia using carbon dioxide.

Male [CrI:CD-1® (ICR)BR] Mice

Test	X	6-8 Weeks		19-21 Weeks		32-34 Weeks	
		Range ± 2S.D.	N	Range ± 2S.D.	N	Range ± 2S.D.	N
HEMATOLOGY							
Hematocrit (%)	42	(36-48)	20 40	(36-44)	20 44	(40-48)	20
Hemoglobin (g/dl)	14.4	(12.6-16.2)	20 11.2	(8.2-14.2)	20 12.6	(9.9-15.3)	20
RBCs (x10 ⁶ /mm ³)	7.6	(7.2-8.0)	20 7.0	(6.4-7.6)	20 7.2	(6.9-7.5)	20
WBCs (x10 ³ /mm ³)	9.0	(8.9-9.1)	20 12.0	(9.7-14.3)	20 12.9	(5.5-20.3)	20
DIFFERENTIAL %							
Segmented Neutrophils	25	(10-40)	20 25	(8-40)	20 27	(10-45)	20
Band Neutrophils	0	(0-2)	20 0	(0-2)	20 0	(0-2)	20
Lymphocytes	70	(52-86)	20 72	(52-92)	20 70	(50-85)	20
Monocytes	4	(0-8)	20 4	(25-61)	20 2	(0-6)	20
Eosinophils	1	(0-2)	20 1	(0-3)	20 1	(0-3)	20
Basophils	0	(0-2)	20 0	(0-2)	20 0	(0-2)	20
Nucleated RBCs (per 100 WBCs)	0	(0-2)	20 0	(0-2)	20 0	(0-2)	20
Platelets (10 ⁵ /mm ³)	12	(10-14)	20 12	(10-14)	20 12	(10-14)	20
ERYTHROCYTE INDICES							
MCV (fl)	77	(69-85)	20 83	(72-94)	20 79	(69-89)	20
MCHC(g/dl)	35	(33-37)	20 35	(31-39)	20 34	(32-36)	20
MCH (pg)	27	(24-30)	20 29	(25-33)	20 27	(24-30)	20
CLINICAL CHEMISTRY							
Glucose (mg/dl)	230	(185-270)	20 270	(210-319)	20 239	(195-283)	20

BUN (mg/dl)	33 (23-43)	20 22 (17-29)	20 20 (17-23)	20
Creatinine (mg/dl)	0.5 (0.2-0.8)	20 0.7 (0.4-1.0)	20 0.5 (0.3-0.7)	20
Calcium (mg/dl)	12.2 (12.0-12.4)	20 11.6 (11.3-11.9)	20 11.3 (10.6-12.0)	20
Inorg Phosphorous (mg/dl)	13.2 (7.8-18.6)	20 9.0 (8.3-9.7)	20 11.5 (9.6-13.4)	20
Total Bilirubin (mg/dl)	0.2 (0.1-0.3)	20 0.2 (0-0.4)	20 0.2 (0-0.4)	20
Cholesterol (mg/dl)	61 (31-91)	20 81 (66-96)	20 85 (67-103)	20
Iron (mg/dl)	299 (187-411)	20 214 (168-260)	20 331 (219-443)	20
Alk Phos (IU/L)	166 (86-246)	20 80 (66-94)	20 85 (72-118)	20
SGOT (IU/L)	248 (24-472)	20 124 (68-180)	20 127 (65-189)	20
SGPT (IU/L)	109 (28-190)	20 84 (22-146)	20 118 (66-170)	20
Sodium (meq/L)	147 (144-150)	20 148 (43-153)	20 148 (146-151)	20
Potassium (meq/L)	5.5 (4.7-6.3)	20 5.1 (3.8-6.4)	20 8.8 (7.3-10.3)	20
Chloride (meq/L)	112 (104-120)	20 107 (103-111)	20 110 (101-119)	20
Total Protein (g/dl)	4.3 (3.0-5.6)	20 4.5 (4.2-4.8)	20 5.2 (4.6-5.8)	20
Albumin (g/dl)	2.6 (1.8-3.4)	20 2.4 (2.1-2.7)	20 2.8 (2.4-3.2)	20
Globulin (g/dl)	1.7 (1.2-2.2)	20 2.1 (1.8-2.4)	20 2.4 (2.0-2.8)	20
A/G ratio	1.6 (1.2-1.9)	20 1.12 (0.9-1.34)	20 1.16 (0.96-1.36)	20

N=Number of Animals Tested
X=Mean

Female [CrI:CD-1®(ICR)BR] Mice

Test	6-8 Weeks		19-21 Weeks		32-34 Weeks		N	
	X	Range±2S. D.	N	X	Range±2S. D.	N		X
HEMATOLOGY								
Hematocrit (%)	43 (38-48)	20 40 (35-46)	20 39 (33-45)	20				
Hemoglobin (g/dl)	14.8 (13.0-16.6)	20 13.5 (11.9-15.1)	20 13.4 (11.4-15.4)	20				
RBCs (x10 ⁶ /mm ³)	5.61 (4.7-6.5)	20 5.41 (4.3-6.4)	20 5.41 (4.5-6.3)	20				
WBCs (x10 ³ /mm ³)	3.0 (1.0-5.0)	20 9.6 (5.2-14.0)	20 8.7 (4.1-13.3)	20				
DIFFERENTIAL %								
Segmented Neutrophils	27 (11-43)	20 19 (10-28)	20 29 (15-43)	20				
Band Neutrophils	0 (0-2)	20 0 (0-2)	20 0 (0-2)	20				
Lymphocytes	68 (50-86)	20 75 (63-87)	20 66 (49-84)	20				
Monocytes	2 (0-5)	20 4 (0-8)	20 3 (0-6)	20				
Eosinophils	4 (0-8)	20 2 (0-4)	20 2 (0-4)	20				
Basophils	0 (0-2)	20 0 (0-2)	20 0 (0-2)	20				
Nucleated RBCs (per 100 WBCs)	0 (0-2)	20 0 (0-2)	20 0 (0-2)	20				
Platelets (10 ⁵ /mm ³)	12 (10-14)	20 12 (10-14)	20 12 (10-14)	20				
ERYTHROCYTE INDICES								
MCV (fl)	76 (69-85)	20 74 (64-84)	20 73 (65-81)	20				
MCHC (g/dl)	35 (31-39)	20 34 (31-37)	20 34 (31-37)	20				
MCH (pg)	26 (23-29)	20 25 (21-29)	20 25 (22-28)	20				
CLINICAL CHEMISTRY								
Glucose (mg/dl)	265 (207-320)	20 255 (175-335)	20 238 (156-320)	20				
BUN (mg/dl)	28 (21-35)	20 23 (17-29)	20 23 (14-32)	20				
Creatinine (mg/dl)	0.6 (0.4-0.8)	20 0.5 (0.3-0.7)	20 0.5 (0.3-0.7)	20				
Calcium (mg/dl)	9.3 (8.4-10.2)	20 11.6 (11.1-12.1)	20 10.7 (10.1-11.3)	20				
Inorg Phosphorous (mg/dl)	11.2 (7.4-15.0)	20 10.1 (9.0-11.2)	20 10.1 (8.8-11.4)	20				
Total Bilirubin (mg/dl)	0.3 (0-0.5)	20 0.3 (0.2-0.4)	20 0.3 (0.1-0.5)	20				
Cholesterol (mg/dl)	59 (41-77)	20 65 (49-81)	20 72 (46-98)	20				
Iron (mg/dl)	322 (210-434)	20 332 (270-394)	20 325 (173-477)	20				
Alk Phos (IU/L)	162 (118-206)	20 54 (28-80)	20 55 (35-75)	20				
SGOT (IU/L)	137 (87-187)	20 153 (55-251)	20 208 (132-284)	20				
SGPT (IU/L)	103 (56-159)	20 106 (28-184)	20 101 (59-143)	20				
Sodium (meq/L)	152 (147-157)	20 147 (145-149)	20 147 (145-149)	20				
Potassium (meq/L)	5.2 (4.2-6.2)	20 7.4 (4.8-10.0)	20 8.2 (6.5-9.9)	20				
Chloride (meq/L)	114 (109-119)	20 102 (96-108)	20 105 (102-108)	20				
Total Protein (g/dl)	4.7 (4.2-5.2)	20 5.6 (5.2-6.0)	20 5.5 (5.0-6.0)	20				

Albumin (g/dl)	3.3 (2.9-3.7)	20 3.2 (3.0-3.4)	20 3.0 (2.7-3.3)	20
Globulin (g/dl)	1.4 (1.2-1.6)	20 2.4 (2.0-2.8)	20 2.4 (2.0-2.8)	20
A/G ratio	1.30 (1.03-1.57)	20 1.33 (1.57-1.90)	20 1.25 (1.01-1.49)	20

N=Number of Animals Tested

X=Mean

Male [CrI:CF-1® BR] Mice

Test	X	6-8 Weeks		19-21 Weeks		32-34 Weeks		N
		Range±2S. D.	N	Range±2S. D.	N	Range±2S. D.	N	
HEMATOLOGY								
Hematocrit (%)	43	(38-48)	20 41	(36-46)	20 41	(33-49)	20	20
Hemoglobin (g/dl)	15.5	(13.8-17.2)	20 14.1	(12.1-16.1)	20 15.9	(13.1-18.7)	20	20
RBCs (x10 ⁶ /mm ³)	5.92	(5.04-6.80)	20 5.39	(4.15-6.63)	20 5.55	(4.65-6.45)	20	20
WBCs (x10 ³ /mm ³)	6.7	(2.7-10.7)	20 5.3	(2.5-8.1)	20 8.3	(3.7-12.9)	20	20
DIFFERENTIAL %								
Segmented Neutrophils	39	(9-69)	20 25	(8-42)	20 21	(8-34)	20	20
Band Neutrophils	0	(0-2)	20 0	(0-2)	20 0	(0-2)	20	20
Lymphocytes	56	(24-88)	20 72	(52-92)	20 74	(61-87)	20	20
Monocytes	5	(0-10)	20 3	(0-6)	20 3	(0-6)	20	20
Eosinophils	2	(0-4)	20 2	(0-4)	20 2	(0-4)	20	20
Basophils	0	(0-2)	20 0	(0-2)	20 0	(0-2)	20	20
Nucleated RBCs (per 100 WBCs)	0	(0-2)	20 0	(0-2)	20 0	(0-2)	20	20
Platelets (10 ⁵ /mm ³)	12.5	(10.5-14.5)	20 12.5	(10.5-14.5)	20 12.5	(10.5-14.5)	20	20
ERYTHROCYTE INDICES								
MCV (fl)	73	(66-80)	20 76	(62-90)	20 76	(71-81)	20	20
MCHC (g/dl)	36	(34-38)	20 35	(33-37)	20 38	(35-41)	20	20
MCH (pg)	26	(23-29)	20 26	(22-30)	20 29	(26-32)	20	20
CLINICAL CHEMISTRY								
Glucose (mg/dl)	256	(178-334)	20 234	(164-304)	20 230	(182-278)	20	20
BUN (mg/dl)	22	(18-26)	20 19	(12-26)	20 23	(10-36)	20	20
Creatinine (mg/dl)	0.5	(0.2-0.8)	20 0.6	(0.3-0.9)	20 0.6	(0.4-0.8)	20	20
Calcium (mg/dl)	11.3	(10.3-12.3)	20 10.2	(9.7-10.7)	20 12.0	(11.3-12.7)	20	20
Inorg Phosphorous (mg/dl)	13.4	(10.9-15.9)	20 12.2	(10.0-14.4)	20 12.2	(10.2-14.2)	20	20
Total Bilirubin (mg/dl)	0.2	(0.1-0.3)	20 0.2	(0.1-0.3)	20 0.3	(0.1-0.4)	20	20
Cholesterol (mg/dl)	134	(117-151)	20 141	(121-161)	20 154	(122-186)	20	20
Iron (mg/dl)	409	(343-475)	20 307	(209-405)	20 336	(256-416)	20	20
Alk Phos (IU/L)	145	(108-182)	20 91	(67-115)	20 121	(55-187)	20	20
SGOT (IU/L)	197	(86-308)	20 188	(62-314)	20 140	(56-224)	20	20
SGPT (IU/L)	185	(63-307)	20 143	(89-197)	20 170	(34-306)	20	20
Sodium (meq/L)	147	(144-150)	20 148	(139-157)	20 156	(152-160)	20	20
Potassium (meq/L)	8.0	(6.0-10.0)	20 7.2	(5.5-8.9)	20 9.4	(8.6-10.2)	20	20
Chloride (meq/L)	104	(101-107)	20 113	(107-119)	20 104	(100-108)	20	20
Total Protein (g/dl)	5.6	(5.2-6.0)	20 5.9	(5.4-6.4)	20 6.3	(5.8-6.8)	20	20
Albumin (g/dl)	3.2	(2.9-3.5)	20 3.3	(3.0-3.6)	20 3.3	(2.9-3.7)	20	20
Globulin (g/dl)	2.4	(2.1-2.7)	20 2.6	(2.1-3.1)	20 2.9	(2.6-3.2)	20	20
A/G ratio	1.32	(1.12-1.52)	20 1.30	(1.02-1.58)	20 1.15	(0.97-1.33)	20	20

N=Number of Animals Tested

X=Mean

Female [CrI:CF-1® BR] Mice

Test	X	6-8 Weeks		19-21 Weeks		32-34 Weeks		N
		Range±2S. D.	N	Range±2S. D.	N	Range±2S. D.	N	
HEMATOLOGY								
Hematocrit (%)	42	(37-47)	20 45	(40-50)	20 43	(38-48)	20	20
Hemoglobin (g/dl)	14.9	(13.5-16.3)	20 16.3	(14.3-18.3)	20 15.5	(13.5-17.5)	20	20
RBCs (x10 ⁶ /mm ³)	5.63	(5.01-6.25)	20 6.00	(5.12-6.88)	20 5.05	(3.91-6.19)	20	20
WBCs (x10 ³ /mm ³)	4.4	(1.8-7.0)	20 5.1	(2.1-8.1)	20 6.7	(2.1-11.3)	20	20

DIFFERENTIAL %									
Segmented Neutrophils	12	(6-18)	20	22	(6-38)	20	21	(6-36)	20
Band Neutrophils	0	(0-2)	20	0	(0-2)	20	0	(0-2)	20
Lymphocytes	84	(77-91)	20	75	(57-93)	20	74	(56-92)	20
Monocytes	3	(1-5)	20	3	(0-6)	20	4	(0-8)	20
Eosinophils	2	(0-4)	20	2	(0-4)	20	2	(0-4)	20
Basophils	0	(0-2)	20	0	(0-2)	20	0	(0-2)	20
Nucleated RBCs (per 100 WBCs)	0	(0-2)	20	0	(0-2)	20	0	(0-2)	20
Platelets (10 ⁵ /mm ³)	12.5	(10.5-14.5)	20	12.5	(10.5-14.5)	20	12.5	(10.5-14.5)	20
ERYTHROCYTE INDICES									
MCV (fl)	75	(68-82)	20	75	(67-83)	20	86	(72-100)	20
MCHC (g/dl)	36	(34-38)	20	37	(35-39)	20	36	(34-38)	20
MCH (pg)	27	(24-30)	20	27	(24-30)	20	31	(26-36)	20
CLINICAL CHEMISTRY									
Glucose (mg/dl)	241	(185-297)	20	278	(187-369)	20	270	(212-328)	20
BUN (mg/dl)	27	(22-32)	20	22	(17-28)	20	22	(17-27)	20
Creatinine (mg/dl)	0.6	(0.3-0.9)	20	0.7	(0.4-1.0)	20	0.7	(0.5-0.9)	20
Calcium (mg/dl)	11.1	(9.3-12.9)	20	10.3	(9.0-11.6)	20	10.8	(10.3-11.3)	20
Inorg Phosphorous (mg/dl)	13.1	(9.7-16.5)	20	11.1	(9.0-13.2)	20	11.7	(9.4-14.0)	20
Total Bilirubin (mg/dl)	0.2	(0.1-0.3)	20	0.3	(0.2-0.4)	20	0.3	(0.2-0.5)	20
Cholesterol (mg/dl)	95	(80-110)	20	129	(105-153)	20	110	(94-126)	20
Iron (mg/dl)	420	(380-460)	20	435	(353-517)	20	327	(231-423)	20
Alk Phos (IU/L)	192	(149-235)	20	243	(183-303)	20	142	(104-180)	20
SGOT (IU/L)	209	(67-351)	20	166	(30-302)	20	177	(42-312)	20
SGPT (IU/L)	289	(96-482)	20	142	(76-208)	20	163	(81-245)	20
Sodium (meq/L)	146	(145-151)	20	149	(143-155)	20	148	(146-150)	20
Potassium (meq/L)	7.3	(6.4-8.2)	20	6.5	(4.8-8.2)	20	8.3	(7.2-9.4)	20
Chloride (meq/L)	108	(99-117)	20	109	(104-114)	20	112	(110-114)	20
Total Protein (g/dl)	5.7	(5.3-6.1)	20	6.0	(5.5-6.5)	20	6.1	(5.8-6.4)	20
Albumin (g/dl)	3.5	(3.3-3.7)	20	3.7	(3.4-4.0)	20	3.5	(3.0-4.0)	20
Globulin (g/dl)	2.2	(1.8-2.6)	20	2.3	(1.8-2.8)	20	2.6	(2.2-3.0)	20
A/G ratio	1.59	(1.20-1.98)	20	1.64	(1.28-2.00)	20	1.38	(1.00-1.76)	20

N=Number of Animals Tested

X=Mean

METHODOLOGY

HEMATOLOGY

Test	Unit	Method
Hematocrit	%	Coulter Counter, Model FN
Hemoglobin	g/dl	Coulter Hemoglobinometer
Erythrocyte Count	x10 ⁶ / mm ³	Coulter Counter, Model FN
Total Leukocyte Count	x10 ³ /mm ³	Coulter Counter, Model FN
Platelet Estimate	x10 ³ / mm ³	Stained Blood Smear
Differential Leukocyte Count	%	Stained Blood Smear (manual count)
Mean Corpuscular Volume (MCV)	fl	Calculated
Mean Corpuscular Hemoglobin Concentration (MCHC)	g/dl	Calculated
Mean Corpuscular Hemoglobin (MCH)	pg	Calculated

CLINICAL CHEMISTRY

Test	Unit	Method
Glucose*	mg/dl	Glucose Oxidase
BUN*	mg/dl	Nod Marsh et al.
Creatinine*	mg/dl	Chasson, Grady & Stanley
Calcium*	mg/dl	Mod. Kessler & Gitelman
Inorganic Phosphorous*	mg/dl	Mod. Hurst & Kraml
Total Bilirubin*	mg/dl	Gambinos automated method
Cholesterol*	mg/dl	Allain & Roeschlau et al.

Iron*	mg/dl	Automated procedure of Giouoniellow et al.
Alk Phos*	IU/L	Mod. Bessey, Lowry & Brock
SGOT*	IU/L	Kessler, Leon, Delea & Cupiola
SGPT*	IU/L	Kessler, Leon, Delea & Cupiola
Sodium	meq/L	IL-ISE 502
Potassium	meq/L	IL-ISE 502
Chloride*	meq/L	Mod. Zall, Fisher & Garner
Total Protein*	g/dl	Biuret
Albumin*	g/dl	Bromocresol Green
Globulin	g/dl	Calculated
A/G Ratio		Calculated

*SMA 18/60 Micro Technicon

If you have any comments, questions, or would like a hardcopy of this document, please contact our Technical Assistance department at +1 800 338-9680.