
ATLAS OF Mammalian Chromosomes

Edited by

Stephen J. O'Brien

Joan C. Menninger

William G. Nash



WILEY-LISS

A John Wiley & Sons, Inc., Publication

ATLAS OF
Mammalian
Chromosomes



ATLAS OF Mammalian Chromosomes

Edited by

Stephen J. O'Brien

Joan C. Menninger

William G. Nash



WILEY-LISS

A John Wiley & Sons, Inc., Publication

Copyright © 2006 by John Wiley & Sons, Inc., Hoboken, NJ. All rights reserved.

Published simultaneously in Canada

No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, scanning, or otherwise, except as permitted under Section 107 or 108 of the 1976 United States Copyright Act, without either the prior written permission of the Publisher, or authorization through payment of the appropriate per-copy fee to the Copyright Clearance Center, Inc., 222 Rosewood Drive, Danvers, MA 01923, (978) 750-8400, fax (978) 750-4470, or on the web at www.copyright.com. Requests to the Publisher for permission should be addressed to the Permissions Department, John Wiley & Sons, Inc., 111 River Street, Hoboken, NJ 07030, (201) 748-6011, fax (201) 748-6008, or online at <http://www.wiley.com/go/permission>.

Limit of Liability/Disclaimer of Warranty: While the publisher and author have used their best efforts in preparing this book, they make no representations or warranties with respect to the accuracy or completeness of the contents of this book and specifically disclaim any implied warranties of merchantability or fitness for a particular purpose. No warranty may be created or extended by sales representatives or written sales materials. The advice and strategies contained herein may not be suitable for your situation. You should consult with a professional where appropriate. Neither the publisher nor author shall be liable for any loss of profit or any other commercial damages, including but not limited to special, incidental, consequential, or other damages.

For general information on our other products and services or for technical support, please contact our Customer Care Department within the United States at (800) 762-2974, outside the United States at (317) 572-3993 or fax (317) 572-4002.

Wiley also publishes its books in a variety of electronic formats. Some content that appears in print may not be available in electronic formats. For more information about Wiley products, visit our web site at www.wiley.com.

Library of Congress Cataloging-in-Publication data is available.

ISBN-13 978-0-471-35015-6

ISBN-10 0-471-35015-X

Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

CONTENTS



Foreword	xxix
Preface	xxxi
Acknowledgments	xxxv
Contributors	xxxvii

SPECIES	COMMON NAME	2N	SOURCE*	
MONOTREMATA				1
Order Monotremata				1
Family Tachyglossidae				
<i>Tachyglossus aculeatus</i>	Short-beaked echidna/Short-nosed echidna	64F	Graves et al. (Unpublished)	6
<i>Tachyglossus aculeatus</i>	Short-beaked echidna/Short-nosed echidna	63M	Graves et al. (Unpublished)	6
<i>Zaglossus bruijini</i>	Long-beaked echidna/Long-nosed echidna	64F	Graves et al. (Unpublished)	7
<i>Zaglossus bruijini</i>	Long-beaked echidna/Long-nosed echidna	63M	Graves et al. (Unpublished)	7
Family Ornithorhynchidae				
<i>Ornithorhynchus anatinus</i>	Platypus	52F	Rens et al. (2004)	8
<i>Ornithorhynchus anatinus</i>	Platypus	52M	Rens et al. (2004)	8
MARSUPIALIA				9
Order Didelphimorphia				9
Family Marmosidae				
<i>Marmosops incanus</i>	South American mouse opossum	14	Svartman (1998)	12
<i>Marmosa sp.</i>	Mouse opossum	14	Aniskin (1994a)	12
<i>Micoureus demerarae</i>	Mouse opossum	14	Svartman (1998)	13
<i>Thylamys elegans</i>	Elegant fat-tailed opossum/Southern mouse opossum	14	Shchipanov et al. (1996)	13
<i>Metachirus nudicaudatus</i>	Brown four-eyed opossum	14	Aniskin et al. (1991)	14
<i>Monodelphis domestica</i>	Short-tailed opossum	18	Graphodatsky et al. (Unpublished)	15
<i>Monodelphis domestica</i> Ideogram	Short-tailed opossum	18	Pathak et al. (1993)	16
Family Caluromyidae				
<i>Caluromys lanatus</i>	Woolly opossum	14	Casartelli et al. (1986)	17
Family Didelphidae				
<i>Philander opossum</i>	Black four-eyed opossum	22	Svartman (1998)	17
<i>Didelphis marsupialis</i>	Common opossum	22	Aniskin et al. (1991)	18
<i>Didelphis virginiana</i>	Virginia opossum	22	CRES San Diego (Unpublished)	18

*Source: Refer to References for published karyotypes and to Contributors for unpublished karyotypes

SPECIES	COMMON NAME	2N	SOURCE*	
Order Paucituberculata				19
Family Caenolestidae				
<i>Rhyncholestes raphanurus</i>	Chilean "shrew" opossum	14	Gallardo and Patterson (1987)	19
Order Microbiotheria				20
Family Microbiotheriidae				
<i>Dromiciops australis</i>	Monito del Monte	14F/13M	Gallardo and Patterson (1987)	20
Order Dasyuromorphia				21
Family Dasyuridae				
<i>Antechinus flavipes</i>	Yellow-footed marsupial "mouse"/Antechinus	14	Rofe (1979)	22
<i>Planigale maculata</i>	Flat-skulled marsupial "mouse"/Planigale	14	Rofe (1979)	23
<i>Ningau sp</i>	Ningauis	14	Rofe (1979)	24
<i>Sminthopsis crassicaudata</i>	Fat-tailed marsupial "mouse"/Sminthopsis	14	Rofe (1979)	25
<i>Antechinomys laniger</i>	Kultarr	14	Rofe (1979)	26
<i>Dasyuroides byrnei</i>	Kowari	14	Rofe (1979)	27
<i>Dasyurus hallucatus</i>	Northern Quoll/Native "cat"/Tiger "cat"	14	Rofe (1979)	28
<i>Dasyurus viverrinus</i>	Eastern Quoll/Native "cat"/Tiger "cat"	14	Rofe (1979)	29
<i>Dasyurus maculatus</i>	Spotted-tailed quoll	14	CRES San Diego (Unpublished)	30
<i>Sarcophilus harrisii</i>	Tasmanian devil	14	CRES San Diego (Unpublished)	30
Order Peramelemorphia				31
Family Peramelidae				
<i>Macrotis (Thylacomys) lagotis</i>	Bilby/Rabbit-eared bandicoot	18F/19M	Martin and Hayman (1967)	32
<i>Isodon obesulus</i>	Short-nosed bandicoot	14	Rofe (1979)	33
<i>Perameles nasuta</i>	Long-nosed bandicoot	14	Rofe (1979)	34
Order Notoryctemorphia				35
Family Notoryctidae				
<i>Notoryctes typhlops</i>	Marsupial mole	20	Calaby et al. (1974)	35
Order Diprotodontia				36
Family Phascolarctidae				
<i>Phascolarctos cinereus</i>	Koala	16	CRES San Diego (Unpublished)	40
Family Vombatidae				
<i>Vombatus ursinus</i>	Common wombat/Coarse-haired wombat	14	Rofe (1979)	41
<i>Lasiorhinus latifrons</i>	Northern hairy-nosed wombat/Soft-furred wombat	14	Rofe (1979)	42
Family Phalangeridae				
<i>Trichosurus vulpecula</i>	Common brush-tailed possum	20	Rofe (1979)	43
Family Potoroidae				
<i>Potorous tridactylus</i>	Long-nosed potoroo	12	Graphodatsky et al. (Unpublished)	44
Family Macropodidae				
<i>Thylogale billardieri</i>	Red-bellied pademelon	22	Rofe (1979)	45
<i>Thylogale thetis</i>	Red-necked pademelon	22	Eldridge et al. (1992a)	46
<i>Petrogale xanthopus celeris</i>	Yellow-footed rock wallaby	22	Eldridge et al. (1992a)	46
<i>Petrogale xanthopus xanthopus</i>	Yellow-footed rock wallaby	22	Eldridge et al. (1992a)	47
<i>Petrogale lateralis lateralis</i>	Black-footed rock wallaby	22	Eldridge et al. (1992a)	47
<i>Petrogale penicillata</i>	Brush-tailed rock wallaby	22	Rofe (1979)	48
<i>Petrogale concinna</i>	Little rock wallaby	16	Eldridge et al. (1992b)	49

*Source: Refer to References for published karyotypes and to Contributors for unpublished karyotypes

SPECIES	COMMON NAME	2N	SOURCE*	
<i>Petrogale brachyotis</i>	Short-eared rock wallaby	20	Eldridge et al. (1992b)	49
<i>Wallabia bicolor</i>	Swamp wallaby	10F/11M	Rofe (1979)	50
<i>Macropus parma</i>	Parma wallaby	16	CRES San Diego (Unpublished)	51
<i>Macropus rufogriseus</i>	Red-necked wallaby	16	Rofe (1979)	51
<i>Macropus eugenii</i>	Tammar wallaby	16	Graphodatsky et al. (Unpublished)	52
<i>Macropus eugenii</i>	Tammar wallaby	16	Rofe (1979)	53
<i>Macropus parryi</i>	Whiptail wallaby	16	Rofe (1979)	54
<i>Macropus giganteus</i>	Eastern gray kangaroo	16	Rofe (1979)	55
<i>Macropus fuliginosus</i>	Western gray kangaroo	16	Rofe (1979)	56
<i>Macropus robustus</i>	Common wallaroo	16	Rofe (1979)	57
<i>Macropus rufus</i>	Red kangaroo	20	Rofe (1979)	57
Family Burramyidae				
<i>Cercartetus concinnus</i>	Western pygmy possum	14	Rofe (1979)	58
Family Pseudocheiridae				
<i>Pseudocheirus peregrinus</i>	Common ring-tailed possum	20	Murray et al. (1980)	59
<i>Petroseudes dahl</i>	Rock ring-tailed possum	16	Murray et al. (1980)	60
<i>Hemibelideus lemuroides</i>	Lemuriod ring-tailed possum/Greater gliding possum	20	McQuade (1984)	60
Family Petauridae				
<i>Petaurus norfolcensis</i>	Lesser gliding possum/Squirrel glider	21	Rofe (1979)	61
Family Tarsipedidae				
<i>Tarsipes rostratus</i>	Honey possum	24	Hayman (1990)	61
Family Acrobatidae				
<i>Acrobates pygmaeus</i>	Pygmy gliding possum/Feather-tailed glider	14	Rofe (1979)	62
AFROTHERIA				63
Order Afrosoricida				63
Order Macroscelidea				63
Family Chrysochloridae				
<i>Chlorotalpa duthieae</i>	African golden mole	30	Bronner (1995a)	65
<i>Chlorotalpa sclateri</i>	African golden mole	30	Bronner (1995a)	65
<i>Amblysomus julianae</i>	South African golden mole	31	Bronner (1995a)	66
<i>Amblysomus iris</i>	South African golden mole	34	Capanna et al. (1989)	66
<i>Amblysomus hottentotus (durban)</i>	South African golden mole	30	Bronner (1995a)	67
<i>Amblysomus hottentotus (dullstroom)</i>	South African golden mole	36	Bronner (1995a)	67
Family Tenrecidae				
<i>Microgale dobsoni</i>	Long-tailed tenrec/Shrew-like tenrec	30	Benirschke (1969)	68
<i>Hemicentetes nigriceps</i>	Streaked Tenrec	38	Benirschke (1969)	68
<i>Echinops telfairi</i>	Small Madagascar hedgehog	40	Benirschke (1969)	69
Family Macroscelididae				
<i>Macroscelides proboscideus</i>	Short-eared elephant shrew	26	CRES San Diego (Unpublished)	70
Order Sirenia				71
Family Trichechidae				
<i>Trichechus manatus latirostris</i>	Florida manatee	48	Gray et al. (2002)	72
<i>Trichechus manatus latirostris</i> Ideogram	Florida manatee	48	Gray et al. (2002)	73

*Source: Refer to References for published karyotypes and to Contributors for unpublished karyotypes

SPECIES	COMMON NAME	2N	SOURCE*	
Order Proboscidea				74
Family Elephantidae				
<i>Elephas maximus</i>	Asian/Indian elephant	56	Houck et al. (2001)	76
<i>Loxodonta africana</i>	African Savanna elephant	56	Houck et al. (2001)	77
Order Hyracoidea				78
Family Procaviidae				
<i>Procavia capensis</i>	Hyrax/Rock Dassie	54	Fronicke (Unpublished)	79
Order Tubulidentata				80
Family Orycteropodidae				
<i>Orycteropus afer</i>	Aardvark/Ant Bear	20	Yang et al. (2003a)	80
XENARTHRA				81
Order Xenarthra				81
Family Megalonychidae				
<i>Choloepus didactylus</i>	Two-toed tree sloth	53	Nash (Unpublished)	83
<i>Choloepus hoffmanni</i>	Two-toed tree sloth/Hoffmann's Sloth	50	Jorge et al. (1977)	84
Family Myrmecophagidae				
<i>Myrmecophaga tridactyla</i>	Giant anteater	60	CRES San Diego (Unpublished)	85
<i>Tamandua tetradactyla (longicaudata)</i>	Lesser anteater/Tamandua	54	Jorge et al. (1977)	86
<i>Cyclopes didactylus</i>	Silky anteater	64	Jorge (2000)	87
Family Dasypodidae				
<i>Chaetophractus villosus</i>	Hairy armadillo/Peludos	60	Jorge et al. (1977)	88
<i>Euphractus sexcinctus flavimanus</i>	Six-banded armadillo	58	Jorge et al. (1977)	89
<i>Zaedyus pichi</i>	Pichi	62	Jorge et al. (1977)	90
<i>Cabassous centralis</i>	Naked-tailed armadillo	62	Benirschke et al. (1969)	91
<i>Cabassous tatouay</i>	Naked-tailed armadillo	50	Benirschke et al. (1969)	91
<i>Tolypeutes matacus</i>	La Plata three-banded armadillo	38	CRES San Diego (Unpublished)	92
<i>Dasypus novemcinctus</i>	Long-nosed armadillo/Nine-banded armadillo	64	Jorge et al. (1977)	92
<i>Dasypus septemcinctus</i>	Long-nosed armadillo/Seven-banded armadillo	64	Barroso and Sevanetz (1991)	93
<i>Dasypus hybridus</i>	Long-nosed armadillo	64	Jorge et al. (1977)	93
EUARCHONTOGLIRES				95
Order Scandentia				95
Family Tupaiidae				
<i>Tupaia belangeri</i>	Northern tree shrew	62	Bigoni and Stanyon (Unpublished)	97
Order Dermoptera				98
Family Cynocephalidae				
<i>Cynocephalus volans</i>	Colugo/Flying lemur/Kagwang	38	Rickart (2003)	99
Order Primates				100
Family Loridae				
<i>Loris tardigradus</i>	Slender loris	62	CRES San Diego (Unpublished)	105
<i>Nycticebus pygmaeus</i>	Pygmy slow loris/Cu Lan	50	CRES San Diego (Unpublished)	106
<i>Nycticebus coucang</i>	Slow loris/Cu Lan	50	Stanyon et al. (1987a)	107

*Source: Refer to References for published karyotypes and to Contributors for unpublished karyotypes

SPECIES	COMMON NAME	2N	SOURCE*	
<i>Galago moholi</i>	Galago/Bushbaby	38	Stanyon et al. (2002)	108
<i>Otolemur crassicaudatus</i>	Brown galago	62	Stanyon et al. (2002)	109
Family Cheirogaleidae				
<i>Microcebus murinus</i>	Mouse lemur	66	CRES San Diego (Unpublished)	110
Family Lemuridae				
<i>Eulemur macaco flavifrons</i>	Black lemur	44	CRES San Diego (Unpublished)	110
<i>Eulemur fulvus sanfordi</i>	Sanford's lemur	60	CRES San Diego (Unpublished)	111
Family Megaladapidae				
<i>Lepilemur ruficaudatus</i>	Red-tailed sportive lemur	20	Rumpler et al. (1985)	112
<i>Lepilemur leucopus</i>	White-footed sportive lemur	26	Rumpler et al. (1985)	112
<i>Lepilemur septentrionalis</i>	Northern sportive lemur	34	Rumpler et al. (1985)	113
Family Indridae				
<i>Propithecus verreauxi coquereli</i>	Coquerel's sifaka	48	CRES San Diego (Unpublished)	114
<i>Propithecus tattersalli</i>	Golden-crowned sifaka	42	CRES San Diego (Unpublished)	114
Family Daubentonidae				
<i>Daubentonia madagascariensis</i>	Aye-aye	30	CRES San Diego (Unpublished)	115
<i>Daubentonia madagascariensis</i> Ideogram	Aye-aye	30	Tagle et al. (1990)	115
Family Tarsiidae				
<i>Tarsius bancanus</i>	Western tarsier	80	Poorman et al. (1985)	116
<i>Tarsius syrichta</i>	Philippine tarsier	80	Rickart (2003)	117
Family Cebidae				
<i>Lagothrix lagotricha</i>	Woolly monkey	62	Stanyon et al. (2001)	118
<i>Alouatta seniculus</i>	Red howler	44F	Stanyon et al. (1995)	118
<i>Alouatta sara</i>	Bolivian red howler	52	Stanyon et al. (1995)	119
<i>Alouatta belzebul</i>	Red-handed howler monkey	50F/49M	Consigliere et al. (1998)	120
<i>Alouatta belzebul</i> Ideogram	Red-handed howler monkey	50F/49M	Consigliere et al. (1998)	121
<i>Alouatta caraya</i>	Black howler monkey	50	Bigoni and Stanyon (Unpublished)	122
<i>Pithecia pithecia</i>	White-faced saki	48	CRES San Diego (Unpublished)	123
<i>Cacajao calvus rubicundus</i>	Red Uakari/Uacari	46	CRES San Diego (Unpublished)	124
<i>Callicebus cupreus</i>	Coppery titi monkey	46	Bigoni and Stanyon (Unpublished)	125
<i>Callicebus pallescens</i>	White-coated titi monkey	50	Stanyon et al. (2000)	126
<i>Callicebus personatus nigrifrons</i>	Atlantis titi monkey	42	Nagamachi et al. (2003)	126
<i>Aotus nancymae</i>	Nancy Ma's night monkey/Douroucouli	54	F. Garcia et al. (2002b)	127
<i>Aotus azarae</i>	Azara's night monkey/Douroucouli	50	F. Garcia et al. (2002b)	127
<i>Cebus capucinus</i>	White-headed Capuchin monkey/Azara's white-faced monkey/Sapajon	54	Campa and Stanyon (1992)	128
<i>Cebus albifrons albifrons</i>	White-fronted Capuchin monkey	54	CRES San Diego (Unpublished)	129
<i>Cebus apella</i>	Tufted Capuchin monkey	54	Clemente et al. (1987)	130
<i>Cebus apella</i> Ideogram	Tufted Capuchin monkey	54	Clemente et al. (1987)	130
<i>Cebus olivaceus</i>	Weeper Capuchin	52	F. Garcia et al. (2002b)	131
<i>Saimiri sciureus</i>	Squirrel monkey	44	Stanyon et al. (2000)	131
Family Callitrichidae				
<i>Callimico goeldii</i>	Goeldi's marmoset	48F/47M	Bigoni and Stanyon (Unpublished)	132
<i>Saguinus imperator</i>	Emperor tamarin	46	CRES San Diego (Unpublished)	132
<i>Saguinus midas</i>	Red-handed tamarin	46	Bigoni and Stanyon (Unpublished)	133
<i>Callithrix jacchus</i>	Common marmoset	46	Bigoni and Stanyon (Unpublished)	134
<i>Callithrix argentata</i>	Silvery marmoset	44	Canavez et al. (1996)	134
<i>Callithrix emiliae</i>	Emilia's marmoset	44	Nagamachi et al. (1996)	135

*Source: Refer to References for published karyotypes and to Contributors for unpublished karyotypes

SPECIES	COMMON NAME	2N	SOURCE*
<i>Callithrix humeralifer</i>	Santarem marmoset	44	Nagamachi et al. (1996) 136
<i>Callithrix chrysoleuca</i>	Gold and white marmoset	44	Nagamachi et al. (1996) 137
<i>Callithrix mavesi</i>	Maués marmoset	44	Nagamachi et al. (1996) 137
<i>Cebuella pygmaea</i>	Pygmy marmoset	44	Bigoni and Stanyon (Unpublished) 138
<i>Leontopithecus chrysopygus</i>	Black lion tamarin	46	Seuanez et al. (1988) 139
<i>Leontopithecus rosalia</i>	Golden lion tamarin	46	Seuanez et al. (1988) 139
Family Cercopithecidae			
<i>Erythrocebus patas</i>	Patas monkey	54	Bigoni and Stanyon (Unpublished) 140
<i>Cercopithecus (Chlorocebus) aethiops</i>	African Green monkey/Grivet monkey	60	Bigoni and Stanyon (Unpublished) 141
<i>Cercopithecus (Chlorocebus) aethiops</i> Ideogram	African Green monkey/Grivet monkey	60	Finelli et al. (1999) 142
<i>Cercopithecus nictitans</i>	Greater spot-nosed guenon/White-nosed monkey	70	Ponsa and Egozcue (1981) 143
<i>Cercopithecus ascanius schmidtii</i>	Schmidt's spot-nosed guenon/Red-tailed monkey	66	CRES San Diego (Unpublished) 144
<i>Cercopithecus petaurista</i>	Lesser spot-nosed guenon	66	Clemente et al. (1990) 145
<i>Cercopithecus mona campbell</i>	Mona monkey	66	Clemente et al. (1990) 145
<i>Cercopithecus cephus</i>	Mustached guenon	66	Clemente et al. (1990) 146
<i>Cercopithecus diana</i>	Diana monkey	58	Ponsa et al. (1986) 147
<i>Cercopithecus pogonias</i>	Guenon	72	Ponsa and Egozcue (1981) 147
<i>Cercopithecus l'hoesti</i>	L'Hoest monkey/L'Hoest guenon	60	CRES San Diego (Unpublished) 148
<i>Miopithecus talapoin</i>	Talapoin	54	Ponsa et al. (1980) 149
<i>Allenopithecus nigroviridis</i>	Allen's swamp monkey	48	CRES San Diego (Unpublished) 150
<i>Cercocebus galeritus</i>	Tana river mangabey	42	Bigoni and Stanyon (Unpublished) 151
<i>Cercocebus torquatus</i>	Collared Mangabey/Red-capped mangabey	42	F. Garcia et al. (2002) 152
<i>Macaca fascicularis</i>	Crab-eating macaque	42	Ruiz-Herrera et al. (2002) 152
<i>Macaca mulatta</i>	Rhesus monkey	42	Bigoni and Stanyon (Unpublished) 153
<i>Papio hamadryas</i>	Hamadryas baboon	42	Bigoni and Stanyon (Unpublished) 153
<i>Macaca fuscata</i>	Japanese macaque	42	Bigoni and Stanyon (Unpublished) 154
<i>Macaca fuscata</i>	Japanese macaque	42	Weinberg et al. (1992) 155
<i>Mandrillus sphinx</i>	Mandrill	42	Ponsa et al. (Unpublished) 156
<i>Trachypithecus obscurus</i>	Dusty leaf monkey	44	Ponsa et al. (1983) 156
<i>Pygathrix nemaeus</i>	Douc langur	44	Bigoni (1995) 157
<i>Trachypithecus cristatus</i>	Silver leaf monkey	44F/44M	Bigoni et al. (1997a) 158
<i>Colobus guereza</i>	Black & white colobus monkey/Kikuya	44	Bigoni et al. (1997b) 159
Family Hylobatidae			
<i>Hylobates syndactylus</i>	Siamang	50	Ponsa et al. (Unpublished) 160
<i>Hylobates concolor</i>	Black-crested gibbon/Concolor gibbon	52	Bigoni and Stanyon (Unpublished) 160
<i>Hylobates concolor</i> Ideogram	Black-crested gibbon/Concolor gibbon	52	Koehler et al. (1995) 161
<i>Hylobates lar</i> Ideogram	White-handed gibbon	44	Jauch et al. (1992) 162
<i>Hylobates moloch</i> Ideogram	Silvery gibbon	42	Stanyon and Chiarelli (1983) 163
Family Pongidae			
<i>Pongo pygmaeus abelii</i>	Sumatran orangutan/Orangutan	48	Bigoni and Stanyon (Unpublished) 164
<i>Pongo pygmaeus</i> Ideogram	Sumatran organutan/Orangutan	48	Yunis and Prakash (1982) 165
<i>Gorilla gorilla</i>	Lowland gorilla	48	Bigoni and Stanyon (Unpublished) 166
<i>Gorilla gorilla</i> Ideogram	Lowland gorilla	48	Yunis and Prakash (1982) 167
<i>Pan troglodytes</i>	Common chimpanzee	48	Bigoni and Stanyon (Unpublished) 168
<i>Pan troglodytes</i> Ideogram	Common chimpanzee	48	Yunis and Prakash (1982) 169
<i>Pan paniscus</i>	Pygmy chimpanzee/Bonobo	48	Bigoni and Stanyon (Unpublished) 170
Family Hominidae			
<i>Homo sapiens</i>	Human	46	Padilla-Nash (Unpublished) 171
<i>Homo sapiens</i> Ideogram	Human	46	Francke (1994) 172

*Source: Refer to References for published karyotypes and to Contributors for unpublished karyotypes

SPECIES	COMMON NAME	2N	SOURCE*	
Order Rodentia				173
Family Sciuridae				
<i>Tamias sibiricus</i>	Chipmunk	38	Graphodatsky and Sablina (Unpublished)	177
<i>Sundasciurus philippinensis</i>	Sunda tree squirrel	38	Rickart (2003)	177
<i>Spermophilus erythrogenys</i>	Ground squirrel/Susliks	36	Graphodatsky and Sabina (Unpublished)	178
<i>Spermophilus undulatus</i>	Ground squirrel/Susliks	32	Graphodatsky and Sabina (Unpublished)	179
<i>Spermophilus alaschanicus</i>	Ground squirrel/Susliks	38	Graphodatsky and Sabina (Unpublished)	180
<i>Petaurista albiventer</i>	Chestnut great flying squirrel	38	Lie and Yang (Unpublished)	181
Family Castoridae				
<i>Castor fiber</i>	Beaver	48	Graphodatsky (Unpublished)	182
<i>Castor canadensis</i>	Beaver	40	Graphodatsky (Unpublished)	183
Family Geomyidae				
<i>Thomomys talpoides</i>	Western pocket gopher	48	Thaeler Jr. (1974)	184
<i>Thomomys talpoides attenuatus</i>	Western pocket gopher	48	Thaeler Jr. (1968)	184
<i>Thomomys talpoides pygmaeus</i>	Western pocket gopher	48	Thaeler Jr. (1968)	185
<i>Geomys attwateri</i> Ideogram	Pocket gopher	70	Smolen and Bickham (1994)	186
Family Heteromyidae				
<i>Dipodomys merriami</i>	Kangaroo rat	52	Mascarello et al. (1974)	187
Family Dipodidae				
<i>Sicista napaea</i>	Birch mouse	42	Graphodatsky (Unpublished)	187
Family Muridae				
<i>Neotoma albigula (micropus)</i>	Wood rat/Pack rat/Trade rat	52	Mascarello et al. (1974)	188
<i>Peromyscus eremicus</i>	Cactus mouse/White-footed mouse/Deer mouse	48	Radjabli et al. (Unpublished)	188
<i>Peromyscus maniculatus</i>	White-footed mouse/Deer mouse	48	Greenbaum et al. (1994)	189
<i>Peromyscus maniculatus</i> Ideogram	White-footed mouse/Deer mouse	48	Greenbaum et al. (1994)	189
<i>Peromyscus boylii</i>	Brush mouse/White-footed mouse/Deer mouse	48	Greenbaum et al. (1994)	190
<i>Oryzomys yunganus</i>	Foothill rice rat	58	Volobouev et al. (2000a)	190
<i>Peromyscus truei</i>	Piñon mouse/White-footed mouse/Deer mouse	48	Greenbaum et al. (1994)	191
<i>Peromyscus truei</i> Ideogram	Piñon mouse/White-footed mouse/Deer mouse	48	Greenbaum et al. (1994)	191
<i>Oryzomys nitidus</i>	Elegant rice rat	80	Volobouev and Aniskin (2000)	192
<i>Oryzomys megacephalus-cytotype 2</i>	Rice rat	54	Volobouev and Aniskin (2000)	192
<i>Oligoryzomys flavescens</i>	Yellow pygmy rice rat	66	Aniskin and Volobouev (1999)	193
<i>Oligoryzomys microtis</i>	Small-eared pygmy rice rat	64	Aniskin and Volobouev (1999)	193
<i>Amphinectomys savamis</i>	Water rat	50	Malygin et al. (1994)	194
<i>Akodon simulator</i>	Grey-bellied grass mouse	36	Aniskin et al. (1996)	195
<i>Akodon toba</i>	Chako grass mouse	42	Aniskin et al. (1996)	195
<i>Abrothrix (Akodon) sanborni</i>	Sanborn's grass mouse	52	Gallardo (1982)	196
<i>Abrothrix (Akodon) longipilis</i>	Long-haired grass mouse	52	Gallardo (1982)	196
<i>Chroeomys (Akodon) olivaceus</i>	Olive grass mouse	52	Gallardo (1982)	196
<i>Eligmodontia puerulus</i>	Highland desert mouse	50	Kelt et al. (1991)	197
<i>Eligmodontia sp</i>	Highland desert mouse	32	Kelt et al. (1991)	197
<i>Maresomys (Auliscomys) boliviensis</i>	Bolivian big-eared mouse	22	Walker and Spotorno (1992)	198
<i>Auliscomys sublimis</i>	Andean big-eared mouse	28	Walker and Spotorno (1992)	198
<i>Loxodontomys (Auliscomys) micropus</i>	Southern big-eared mouse	34F/32M	Walker and Spotorno (1992)	198

*Source: Refer to References for published karyotypes and to Contributors for unpublished karyotypes

SPECIES	COMMON NAME	2N	SOURCE*	
<i>Euneomys chinchilloides petersoni</i>	Patagonian chinchilla mouse	36	Reise and Gallardo (1990)	199
<i>Euneomys mordax</i>	Patagonian chinchilla mouse	42	Reise and Gallardo (1990)	199
<i>Calomyscus mystax</i>	Afghan mouselike hamster	44	Radjabli et al. (Unpublished)	200
<i>Calomyscus urartensis</i>	Urartsk mouselike hamster	32	Radjabli et al. (Unpublished)	201
<i>Calomyscus bairdardi</i>	Mouselike hamster	44	Radjabli et al. (Unpublished)	202
<i>Phodopus sungorus sungorus</i>	Dzhungarian hamster	28	Radjabli et al. (Unpublished)	203
<i>Phodopus sungorus campbelli</i>	Campbell's hamster	28	Radjabli et al. (Unpublished)	204
<i>Phodopus roborovskii</i>	Small desert hamster	34	Radjabli et al. (Unpublished)	205
<i>Cricetus cricetus</i>	Black-bellied hamster	22	Radjabli et al. (Unpublished)	206
<i>Allocricetulus eversmanni</i>	Eversmann's hamster	26	Sablina et al. (Unpublished)	207
<i>Allocricetulus curtatus</i>	Mongolian hamster	20	Sablina et al. (Unpublished)	208
<i>Cricetulus migratorius</i>	Gray dwarf hamster	22	Radjabli et al. (Unpublished)	209
<i>Cricetulus barabensis</i>	Striped dwarf hamster	20	Radjabli et al. (Unpublished)	210
<i>Cricetulus pseudogriseus</i>	Transbaikal dwarf hamster	24	Radjabli et al. (Unpublished)	211
<i>Cricetulus griseus</i>	Chinese hamster	22	Radjabli et al. (Unpublished)	212
<i>Cricetulus obscurus</i>	Gobi hamster	20	Radjabli et al. (Unpublished)	213
<i>Cricetulus longicaudatus</i>	Lesser long-tailed hamster	24	Radjabli et al. (Unpublished)	214
<i>Tscherskia (Cricetulus) triton</i>	Greater long-tailed hamster	28	Radjabli et al. (Unpublished)	215
<i>Mesocricetus brandti</i>	Brandt's hamster	42	Radjabli et al. (Unpublished)	216
<i>Mesocricetus brandti</i>	Brandt's hamster	44	Popescu and DiPaolo (1980)	217
<i>Mesocricetus auratus</i>	Syrian golden hamster	44	Radjabli et al. (Unpublished)	218
<i>Mesocricetus auratus</i> Ideogram	Syrian golden hamster	44	Popescu and DiPaolo (1972)	219
<i>Mesocricetus raddei</i>	Ciscaucasian hamster	44	Radjabli et al. (Unpublished)	220
<i>Mesocricetus newtoni</i>	Romanian hamster	38	Radjabli et al. (Unpublished)	221
<i>Nannospalax (Spalax) ehrenbergi</i>	Mediterranean blind mole-rat	60	Ivanitskaya and Nevo (1998)	222
<i>Tatera nigricauda</i>	Large naked-soled gerbil	40	Qumsiyeh (1986)	222
<i>Tachyoryctes macrocephalus</i>	Big-headed mole-rat/African mole-rat	50	Aniskin et al. (1997b)	223
<i>Tachyoryctes splendens</i>	East African mole-rat	48	Aniskin et al. (1997b)	224
<i>Gerbillus rupicola</i>	Rocky gerbil/Northern pygmy gerbil	52	Granjon et al. (2002)	225
<i>Taterillus petteri</i>	Petter's gerbil/Small naked-soled gerbil	19	Dobigny (2002)	226
<i>Taterillus pygargus</i>	Senegal gerbil/Small naked-soled gerbil	22	Dobigny (2002)	226
<i>Taterillus arenarius</i>	Senegal gerbil/Small naked-soled gerbil	35	Volobouev and Granjon (1996)	227
<i>Taterillus tranieri</i>	Tranier's gerbil/Small naked-soled gerbil	15	Dobigny et al. (2003)	227
<i>Taterillus congicus</i>	Congo gerbil/Small naked-soled gerbil	54	Dobigny (2002)	228
<i>Taterillus sp 1</i>	Small naked-soled gerbil	23	Dobigny et al. (2002)	229
<i>Taterillus sp 2</i>	Small naked-soled gerbil	37	Dobigny et al. (2002)	230
<i>Clethrionomys rufocanus</i>	Gray red-backed vole/Red-backed vole/Bank vole	56	Sokolov et al. (1990)	231
<i>Clethrionomys sikotanensis</i>	Sikotan vole/Red-backed vole/Bank vole	56	Sokolov et al. (1990)	232
<i>Clethrionomys rutilus</i>	Northern red-backed vole/Bank vole	56	Sokolov et al. (1990)	233
<i>Clethrionomys gapperi</i>	Southern red-backed mouse/Bank vole	56	Modi (1987)	234
<i>Clethrionomys californicus</i>	Western red-backed mouse/Bank vole	56	Modi (1987)	234
<i>Clethrionomys glareolus</i>	Red-backed vole/Bank vole	56	Sokolov et al. (1990)	235
<i>Clethrionomys centralis</i>	Tien Shan red-backed vole	56	Sokolov et al. (1990)	236
<i>Eothenomys regulus</i>	Royal vole/Père David's vole/Pratt's vole	56	Sablina et al. (Unpublished)	237
<i>Alicola argentatus</i>	Silver high mountain vole	56	Sablina et al. (Unpublished)	238
<i>Alicola macrotis</i>	Large-eared vole	56	Sablina et al. (Unpublished)	239
<i>Phenacomys intermedius</i>	Heather vole	56	Modi (Unpublished)	240
<i>Arvicola terrestris</i>	European water vole/Bank vole	36	Sablina et al. (Unpublished)	241
<i>Chionomys nivalis</i>	European snow vole	54	Sablina et al. (Unpublished)	242
<i>Chionomys roberti</i>	Robert's snow vole	54	Sablina et al. (Unpublished)	243

*Source: Refer to References for published karyotypes and to Contributors for unpublished karyotypes

SPECIES	COMMON NAME	2N	SOURCE*	
<i>Chionomys gud</i>	Caucasian snow vole	54	Sablina et al. (Unpublished)	244
<i>Blanfordimys afghanus</i>	Afghan vole	58	Sablina et al. (Unpublished)	245
<i>Blanfordimys bucharicus</i>	Bucharian vole	48	Sablina et al. (Unpublished)	246
<i>Microtus juldaschi carruthersi</i>	Juniper vole/Vole/Meadow mouse	54	Sablina et al. (Unpublished)	247
<i>Microtus subterraneus</i>	European pine vole/Vole/Meadow mouse	54	Sablina et al. (Unpublished)	248
<i>Microtus daghestanicus</i>	Daghestan pine vole/Vole/Meadow mouse	54	Sablina et al. (Unpublished)	249
<i>Microtus majori</i>	Major's pine vole/Vole/Meadow mouse	54	Sablina et al. (Unpublished)	250
<i>Microtus nasarovi</i>	Nasarov's vole/Vole/Meadow mouse	42	Sablina et al. (Unpublished)	251
<i>Microtus schelkovnikovi</i>	Schelkovnikov's pine vole/Vole/Meadow mouse	54	Sablina et al. (Unpublished)	252
<i>Microtus pinetorum</i>	Campagnol/Sylvestre pine vole/Woodland vole/Vole/Meadow mouse	62	Modi (1987)	253
<i>Microtus ochrogaster</i>	Prairie vole/Vole/Meadow mouse	54	Modi (1987)	253
<i>Microtus richardsoni</i>	Water vole/Vole/Meadow mouse	56	Modi (1987)	254
<i>Microtus longicaudus</i>	Coronation Island vole/Long-tailed vole/Vole/Meadow mouse	64	Modi (1987)	254
<i>Microtus socialis</i>	Social vole/Vole/Meadow mouse	62	Sablina et al. (Unpublished)	255
<i>Microtus socialis schiddlovskii</i>	Schiddlovskii's social vole/Vole/Meadow mouse	60	Sablina et al. (Unpublished)	256
<i>Microtus guentheri arm</i>	Günther's vole/Vole/Meadow mouse	60	Sablina et al. (Unpublished)	256
<i>Microtus guentheri philistinus</i>	Günther's vole/Vole/Meadow mouse	54	Sablina et al. (Unpublished)	257
<i>Microtus arvalis arvalis</i>	Common vole/Vole/Meadow mouse	46	Sablina et al. (Unpublished)	258
<i>Microtus rossiaemeridionalis</i>	Southern vole/Vole/Meadow mouse	54	Sablina et al. (Unpublished)	259
<i>Microtus transcasicus</i>	Transcaspian vole/Vole/Meadow mouse	52	Sablina et al. (Unpublished)	260
<i>Microtus kirgisorum</i>	Tien Shan vole/Vole/Meadow mouse	54	Sablina et al. (Unpublished)	261
<i>Microtus oeconomus</i>	Tundra vole/Vole/Meadow mouse	30	Modi (1978)	262
<i>Microtus montebelli</i>	Japanese grass vole/Vole/Meadow mouse	30	Sablina et al. (Unpublished)	262
<i>Microtus fortis</i>	Reed vole	52	Kovalskaya et al. (1991)	263
<i>Microtus mongolicus</i>	Mongolian vole/Vole/Meadow mouse	50	Sablina et al. (Unpublished)	264
<i>Microtus hyperboreus</i>	North Siberian vole/Vole/Meadow mouse	50	Sablina et al. (Unpublished)	264
<i>Microtus sachalinensis</i>	Sakhalin vole/Vole/Meadow mouse	50	Sablina et al. (Unpublished)	265
<i>Microtus maximowiczii</i>	Maximowicz's vole/Vole/Meadow mouse	44	Sablina et al. (Unpublished)	266
<i>Microtus mujanensis</i>	Musk vole/Vole/Meadow mouse	38	Sablina et al. (Unpublished)	266
<i>Microtus evoronensis</i>	Evoronsk vole/Vole/Meadow mouse	40	Sablina et al. (Unpublished)	267
<i>Microtus gregalis</i>	Narrow-headed vole/Vole/Meadow mouse	36	Sablina et al. (Unpublished)	268
<i>Microtus agrestis</i>	Field vole/Vole/Meadow mouse	50	Modi (1987)	269
<i>Microtus pennsylvanicus</i>	Campagnol des champs/Meteoro de prado/Vole/Meadow mouse	46	Modi (1987)	269
<i>Microtus breweri</i>	Beach vole/Vole/Meadow mouse	46	Modi (1987)	270
<i>Microtus townsendii</i>	Townsend's vole/Vole/Meadow mouse	50	Modi (1987)	270
<i>Microtus oregoni</i>	Creeping vole/Vole/Meadow mouse	17–18	Modi (1987)	271
<i>Microtus californicus</i>	Amargosa vole/California vole/Vole/Meadow mouse	53	Modi (1987)	271
<i>Microtus mexicanus</i>	Mexican vole/Vole/Meadow mouse	48	Modi (1987)	272
<i>Lagurus lagurus</i>	Steppe lemming	56	Modi (1987)	272
<i>Microtus sp nova from Iran</i>	Vole/Meadow mouse	54	Sablina et al. (Unpublished)	273
<i>Neofiber alleni</i>	Round-tailed muskrat/Florida water rat	52	Modi (1987)	274
<i>Dicrostonyx torquatus</i>	Collared lemming/Varying lemming	30	Modi (1987)	274
<i>Lemmus sibiricus</i>	True lemming	50	Modi (1987)	275
<i>Synaptomys cooperi</i>	Bog lemming	50	Modi (1987)	275
<i>Prometheomys schaposchnikowi</i>	Long-clawed Mole-vole	56	Sablina et al. (Unpublished)	276

*Source: Refer to References for published karyotypes and to Contributors for unpublished karyotypes