脊椎動物染色體數の表

Check-List of Chromosome Numbers in Vertebrata

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Harvey が1916年及1920年の二回に亙り當時に於て知られて居つた Metazoa 全部の染色體數の表を作り何人が何誌に何の種類に就て何個の染色體を報告したかと云ふ事を一目瞭然と判る様にした事は單に此の方面の研究に就て綜合的の知識を得るに便利である計りで無く一般研究者の文獻渉獵の上にも頗る有意義なる企であつた。其の後已に十年が過ぎた。此の間に染色體の研究は益々增加して追加す可き data も中々多い。特に Reptilia, Aves 及 Mammalia に關しては 1920 年以後の研究の方が多い位である。そこで筆者は自らの研究に資する爲めにも亦後より來る人々への手引きの爲めにも此際 Harvey の表を增補する事は必要であると信じ先づ Vertebrata 丈を書き上げて見た。

同じ種類の表は Wilson (1925) の著書にも Schrader (1928) の著書にも載つて居る。然し兩者とも完全な者では無く中には誤すら見える。本表とても元より完全とは云へないが本年 (1930) 迄の文獻を充分參照してあるから今の所調べ上げた數に於て丈けでも以上の諸氏の作つた表に優つて居る。大方研究者の座右にありて檢索比較の便に供せらるれば幸である。

本表は元より骨子を Harvey の作つた表にとつてあるが二三記述事項を變更した點もある。其の一は Spermatid の欄を除いた事であるが夫れは Spermatid と 2nd Cyte との間に數の相異が無いからであつて唯特別なる場合例へば所謂 double reduction と云ふ事の在る場合などは Remarks の欄に於て記入して置いた。其の二は研究者の便を圖つて Fixative の欄を新しく設けた事で其の中 underline して置いた者は夫れを用ひた著者が最上の結果を得たと云ふ者を示したのである。

又表にある 1st Cyte, 2nd Cyte の欄にある數字は總て Spermatocyte の染色體數を示した者であつて, Oocyte の夫れを示すためには特に ♀ の記號に依り區別する事にした。

Abbreviation の主なる者を次に擧げる。

Abbreviation

acet.=glacial acetic acid
alc.=alcohol
Ben.=BENDA's fluid
Bou.=BOUIN's fluid
Bou.-Al.=ALLEN's modification of Bouin's fluid
Car.=CARNOY's fluid
Cham.=CHAMPY's fluid
chrom.=Chromosome
chrom.=chromic acid (in column of fixative)
cl.=cleavage
conc.=concentrated
div.=division
Flem.=FLEMMING's fluid
Flem.-Mev.=MEVES' modification of FLEMMING's fluid
Flem.-Han.=HANCE's modification of FLEMMING's fluid
Form.=Formalin
Gil.=GILSON's fluid
Her.=HERMANN's fluid
Mül.=MÜLLER's fluid
mix.=mixture
oog.=oogonia
parth.=parthenogenesis
prob.=probably
som.=somatic
spg.=spermatogonia
Sub.=Sublimate solution
Telleys.=TELLYESNICZKY's fluid
temp.=temperature
tid.=spermatid
Zenk.=ZENKER's fluid

CHECK-LIST OF CHROMOSOME

Species	Diploid	1st-Cyte	2nd-Cyte
		I. PISCES	
Bdellostoma burgeri	48 ? spg	—	—
Myxine glutinosa	ca. 52 spg ca. 52 som	26 (Possibly 27)	26
Spinax niger	60-70 spg	—	—
Myxine glutinosa	ca. 50 som	—	—
Lepidosiren paradoxa	Prob. 36 som	—	—
Lepidosiren paradoxa	38 som	19	—
Pristiurus melanostomus	—	30–50 ♀	—
Pristiurus	ca. 36 spg 30–36 oog 30–36 som	ca. 18 ♀	ca. 18 ♀
Pristiurus *Raja macrorhynchus* *Raja maculata*	24 spg	12	12
Scyllium canicula	—	30–50 ♀	—
Scyllium canicula	24 spg	12	12
Scyllium canicula	—	20–24	14–16
Torpedo ocellata	—	30–50 ♀	—
Torpedo	24 spg	12	12
Scyllium canicula	—	17–19 ♀	—
Ctenolabrus adspersus	38–48 cl	—	—
Fundulus heteroclitus	36 cl	—	—
Menidia notata	36 cl	—	—
Fundulus heteroclitus	45 cl	—	—
Salmo fario	—	ca. 12 ♀	ca. 12 ♀
'Forelle'	12 cl (Prob)	—	—
Trutta fario	24 cl	12 ♀	12 ♀
Trutta lacustris	—	24 ♀ (at least)	24 ♀
Gambusia holbrooki	36 spg	18	18

1) In the present list, the chromosome number is arranged after the fashion of HARVEY'S cytologists during the past ten years have been added as completely as possible from papers

NUMBERS IN VERTEBRATA[1]

Remarks	Fixative	Author	Reference
—	Form.	SCHREINER, '08	Arch. Zellf., 1
—	Her.;Flem.;Mül.; Sub.-acet.; Zenk.	SCHREINER, '04	Arch. Biol., 21 Anat. Anz., 24
—	"	SCHREINER, '07	Arch. Biol., 22
—	—	RETZIUS, '90	Verh. d. biol. Vereins Stockholm, 2
—	—	MURRAY, '06	Anat. Anz., 28
—	—	AGAR, '11 AGAR, '12	Q. J. M. S., 57 Q. J. M. S., 58
—	Conc. Sub.	KASTSCHENKO, '90	Zeit. wiss. Zool., 50
—	Her.; Sub.-acet.	RÜCKERT, '92	Anat. Anz. 7
—	Her.; Flem.; Sub.-acet.; Sub.	MOORE, '95 FARMER & MOORE, '04	Q. J. M. S., 38 Q. J. M. S., 48
—	Conc. Sub.	KASTSCHENKO, '90	Zeit. wiss. Zool., 50
—	—	MOORE, '94 MOORE, '95	Anat. Anz., 9 Q. J. M. S., 38
—	—	FARMER & MOORE, '04 RAWITZ, '99	Q. J. M. S., 48 Arch. mikr. Anat.. 53
—	Conc. Sub.	KASTSCHENKO, '90	Zeit. wiss. Zool., 50
—	—	MOORE, '95 MOORE & FARMER, '04	Q. J. M. S., 38 Q. J. M. S., 48
—	—	CERRUTI, '08	Atti real. Accad. Sc., vol. 13
—	—	PINNEY, '18	Jour. Morph., 31
—	Flem.; Perenyi; Picro-acet. Zenk.	MOENKHAUS, '04	Am. Jour. Anat., 3
—	"	MOENKHAUS, '04	Am. Jour. Anat., 3
—	—	PINNEY, '18	Jour. Morph., 31
—	—	BÖHM, '91	Sitz. Gesel. Morph. Phsiol. München, 7
Sperm treated with radium.	—	OPPERMANN, '13	Arch. mikr. Anat., 83
—	2% Chrom.-acet. and in 2% Chrom.	BEHRENS, '98	Anat. Hefte, 10
—	—	BLANC, '94	Ber. Naturf. Gesel. Freiburg, 8
Sex-chroms.?	Bou.-Al.	GEISER, '24	Biol. Bull., 47

tabulation (1920, Jour. Morph., 34) with slight modifications, to which new data, obtained by appearing up to the end of 1930.

Species	Diploid	1st-Cyte	2nd-Cyte
Lebistes reticulatus	46 spg 46 oog	23 23 ♀	23
Umbra limi	22 spg 20 som	11	11
'Perch'	27 spg	—	—

II. AMPHIBIA

I. Anura			
Alytes obstetricans	32 spg	16	—
Bombinator igneus	—	—	6–7 ♀
Bufo calamita	—	12 ♀	—
Bufo lentiginosus	24 spg 24 oog	12 12 ♀	12 12 ♀
Bufo vulgaris	—	8–10 ♀	8 ♀
Bufo vulgaris	18–24 oog	—	—
Bufo vulgaris	—	8–9 ♀	—
Bufo viridis	22 spg, oog	11	11
Bufo calamita	22 spg, oog	11	11
Bufo valgaris	22 spg, oog	11	11
Bufo bufo japonicus	22 spg	11	11=10+X
Bufo sachalinensis	22 spg	11	11
Pelodytes punctatus	—	6 ♀	—
Rana catesbiana	26 oog	—	—
Rana catesbeiana larvae	28 spg	14	—
Rana esculenta	24 som		—
Rana esculenta	24	—	—
Rana esculenta	16 spg	—	—

PISCES-Continued

Remarks	Fixative	Author	Reference
Prob. XY in male, XX in female.	Car.	WINGE, '22, '23	Jour. Genet., 12 Jour. Genet., 13
orb. XX in male.	Car.; Gil.; Flem.-Han.; Bou.-Al. at water temp.	FOLEY, '26	Biol. Bull., 50
——	Flem.; Gil.; Bou.-Al.	TURNER, '19	Jour. Morph., 32
——	—	JANSSENS et WILLEMS, '09	La Cellule, 25
——	—	LEBRUN, '01	La Cellule, 19
——	—	BATAILLON, '10	Arch. Zool. exp. et gen., Ser. V, t. 6
——	Flem.; Zenk. Her.; Sub.-acet.; Chrom.-acet.	KING, '02 '07 '08 '01 '05	Anat. Anz., 21 Am. Jour. Anat., 7 Jour. Morph., 19 Jour. Morph., 17 Biol. Bull., 9
——	—	CARNOY et LEBRUN, '00 LEBRUN, '01	La Cellule, 17 La Cellule, 19
——	—	DELLA VALLE, '07	Atti R. Accad. Sc. Napoli, Ser. 2a, Nr. 13, vol. 13
——	—	BATAILLON, '10	Arch. Zool. exp. et gen., Ser. V, t. 6
No cytological evidence of sex chroms.	Zenk.	STOHLER, '28	Zeit. Zellf. mikr. Anat., 7
Prob. XX in male	Cham.	IRIKI, '29	Zool, Magazine, Tokyo, 41
A pair of heterochroms.	Flem.; Flem. with few drops of acet.	MAKINO, '30	Zool. Magazine, Tokyo, 42
——	—	BATAILLON, '10	Arch. Zool. exp. et gen., Ser. V, t. 6
——	Flem.; Tellyes.	SWINGLE, '17	Biol. Bull., 33
——	Flem.; Bou.-Al.	SWINGLE, '21	Jour. Exp. Zool., 32
——	Flem.; Chrom.-acet.	SCHOTTLÄNDER, '88	Arch. mikr. Anat., 31
——	—	VOM RATH, '95	Arch. mikr. Anat., 46
——	—	CHAMPY, '13	Arch. Zool. exp. et gen., 52

Species	Diploid	1st-Cyte	2nd-Cyte
Rana esculenta	ca. 25 spg	13	12, 13=12+X
Rana fusca	24 spg	12	12
Rana fusca	12 cl (parth)	12 ♀	—
Rana fusca	20 parth, som	—	—
Rana pipiens	25 spg 26 oog	13	12, 13=12+X
Rana temporaria	—	8	—
Rana temporaria	—	8–10 ♀	10 ♀
Rana temporaria	24 cl ca. 12 parth, cl	—	—
Rana ('Frosch')	16 som	—	—
'Grenouille'	12 som 6 parth, som	—	—
'Leopard frog'	20 parth, spg	—	—
Rana temporaria	26 spg	13	13
Rana pipiens	26–27 parth, spg; 26–27 parth, oog	13	—
Rana nigromaculata	26 spg	13	13=12+X
Rana rugosa	26 spg	13	13=12+X
Hyla arborea japanica	24 spg	12	12=11+X
2. Urodela			
Amblystoma ('Siredon')	12 cl	—	—
'Axolotl'	ca. 16 cl	4–10 ♀	8 ♀
'Axolotl'	ca. 30 cl	15♀ (14–16)	15♀ (14–16)
'Siredon'	24 som	—	—
Amblystoma	24 som	—	—

AMPHIBIA-Continued

Remarks	Fixative	Author	Reference
X undivided to one pole in 1st	Flem.; Her.; Car.; Zenk.; Bou.; Tellyes.	Levy, '15	Arch. mikr. Anat., 86
——	—	Vom Rath, '95	Arch. mikr. Anat., 46
——	—	Bataillon, '10	Arch. Zool. exp. et gen. Ser. V, t. 16
——	—	Bracket, '11	Arch. Biol., 26
X undivided to one pole in 1st.	Flem.; Tellyes.	Swingle, '17	Biol. Bull., 33
——	—	Bertacchini, '96	Inter. Monats., 13
——	—	{Carnoy et Lebrun, '00 {Lebrun, '01	La Cellule, 17 La Cellule, 19
——	—	Levy, '13	Arch. mikr. Anat., 82
Leucocytes	—	Dekhuyzen, '91	Anat. Anz., 6
6♂ and 6♀ in tid.	—	Dehorne, '10, '11	C.R. Acad. Sc., Paris, 150, 152
Adult parth. frog.	—	Loeb, '18	Proc. Nat. Acad. Sc., 4
Apparently X-Y in male. XY equational in 1st, reductional in 2nd.	Zenk.; Bou.; Car.; Flem.	Witschi, '24	Zeit. Zellf. Gewebelehre, 1
Prob. X-Y in female.	Flem.; Bou.-Al.	Parmenter, '25	Jour. Gener. Physiol., 8
Prob. X-X in male.	—	Iriki, '28	Zool. Magazine, Tokyo, 40
Prob. X-X in male.	—	,,	,,
Prob. X-X in male.	Cham.; Flem. without acet.; Flem.	Iriki, '30	Mem. Coll. Sci., Kyoto Imp. Univ., vol. V
——	—	Kölliker, '89	Geweblehre des Menschen.
——	1% chrom. 25 cc. water 75 cc. acet. 0.1 cc.	Fick, '93	Zeit. wiss. Zool., 56
——	—	Jenkinson, '04	Q. J. M. S., 48
——	—	Muckermann, '13	La Cellule, 28
——	—	Mack, '14	Kansas Univ. Sc. Bull., 9

Species	Diploid	1st-Cyte	2nd-Cyte
Amphiuma	—	12	12
Aneides lugubris	28 spg (23-30)	14	—
Batrachoseps attenuatus	24 spg	12	12
Batrachoseps attenuatus	24 som	12	12
Cryptobranchus allegheniensis	—	12♀ (Prob.)	—
"	c. 56 cl	—	—
Desmognathus fuscus	—	12	12
Desmognathus fuscus	24 spg	12	—
Diemyctilus torosus	—	12♀ (10–12)	10–12 ♀
Geotriton fuscus	24 spg	12	12
Molge pyrrhogastra	24 spg	—	—
Necturus maculosus	—	12	—
Plethodon cinereus	24 spg	12	—
Salamandra atra	16 spg	—	—
Salamandra maculosa	24 som	12	12
Salamandra maculosa	24 som ca. 16 testis epithelium and egg follicle	—	—
Salamandra maculosa	12 (double) spg 12 (double) oog 24 som	12	12
Salamandra maculosa	24 spg 24 oog 24 som	12	12

AMPHIBIA-Continued

Remarks	Fixative	Author	Reference
—	Her.; Flem.; acet.-alc.	McGregor, '99	Jour. Morph., 15, Suppl.
—	—	Snook & Long, '14	Univ. Calif. Pub., 11
—	Her.; Flem.	Eisen, '00	Jour. Morph., 17
—	—	Janssens et Dumez, '03	La Cellule, 20
—	K-bichromate 1 gr. acet. 2.5 cc. form. 5 cc. water 92 cc.	Smith, '12	Jour. Morph., 23
—	Sat. Sub. in 10% form. 97.5 cc. and acet. 2.5 cc.	" '29	Jour. Morph., 47
—	Her.; Flem.	Kingsbury, '99 " '02	Zool. Bull., 2 Am. Jour. Anat., 1
—	Her.; Flem.	Montgomery, '03	Biol. Bull., 4
—	—	Lebrun, '02 " '02	Biol. Bull., 3 La Cellule, 20
—	Ben.; Maximow	Terni, '10 " '14	Monit. Zool. Ital., 21 Arch. Zellf., 12
—	—	Muckermann '13	La Cellule, 28
X or XY attached to an autosome to one pole in 1st. Free or attached in 2nd.	—	King, '12	Anat. Rec., 6
—	Her.; Flem.	Montgomery, '03	Biol. Bull., 4
—	—	Champy, '13	Arch. Zool. exp. et gen., 52
—	Chrom-osmic-acetic Mix.	Flemming, '82 " '87	Arch. mikr. Anat., 20 Arch. mikr. Anat., 29
—	—	Rabl, '85 " '89	Morph. Jahrb., 10 Anat. Anz., 4
—	Flem.; Her.; Sat. picric. 500. cc. acet. 3.0 cc. $PlCl_4$ 5.0 gr. Osmic. 2 gr.	vom Rath, '93 " '94	Zeit. wiss. Zool., 57 Biol. Centralb., 14
—	—	Meves, '95 " '97 " '11	Anat. Anz., 10 Arch. mikr. Anat., 48 Arch. mikr. Anat., 77

Species	Diploid	1st-Cyte	2nd-Cyte
Salamandra maculosa	24 spg	12 12 ♀	12 12 ♀
Salamandra maculosa	24 spg	12	12
Salamandra maculosa	4-43 blood cells; 19-27 larval peritoneum	—	—
Salamandra maculosa	12 (pairs) spg 12 (pairs) som	—	—
Salamandra maculosa	16 spg	—	—
Salamandra maculosa	24 spg 24 som	—	—
'Salamander'	24 som	—	—
Triton alpestris	—	12 ♀	12 ♀
Triton alpestris	24 spg	12 12 ♀	12 12 ♀
Triton alpestris	18-24 spg	—	—
Triton cristatus	—	12 ♀	12 ♀
Triton cristatus	24 spg	12 12 ♀	12 12 ♀
Triton cristatus	24 som; 12 regenerating blood cells	—	—
Triton cristatus	18-24 spg	—	—
Triton cristatus	24 spg	12	12
Triton palmatus	18-24 spg	—	—
Triton punctatus	ca. 12-16 som	—	—
Triton punctatus	24 spg	12 12 ♀	12 12 ♀

AMPHIBIA-Continued

Remarks	Fixative	Author	Reference
—	Perenyi; Bou.	JANSSENS, '00 " '01 " '02 " '04	Anat. Anz., 17 La Cellule, 19 Anat. Anz., 21 Anat. Anz., 24
—	Her.; Flem.; Mül.; Sub.-acet.; Zenk.	SCHREINER, '07	Arch. Biol., 22
—	—	DELLA VALLE, '09 " '11	Archivio Zoologico, 4 Archivio Zoologico, 5
—	—	DEHORNE, '10 " '11	C. R. Acad. Sc., Paris, 150 Arch. Zellf., 6
—	—	CHAMPY, '13	Arch. Zool. exp. et gen., 52
—	—	MUCKERMANN, '13	La Cellule, 28
—	—	VON ERLANGER, '96	Zool. Anz., 19
—	—	CARNOY et LEBRUN, '99 LEBRUN, '01	La Cellule, 16 La Cellule, 19
—	Perenyi; Bou.	JANSSENS, '00 " '01 " '02 " '04	Anat. Anz., 17 La Cellule, 19 Anat. Anz., 21 Anat. Anz., 24
—	—	CHAMPY, '13	Arch. Zool. exp. et gen., 52
—	—	CARNOY et LEBRUN, '99	La Cellule, 16
—	Perenyi; Bou.	JANSSENS, '00 " '01 " '02 " '04	Anat. Anz., 17 La Cellule, 19 Anat. Anz., 21 Anat. Anz., 24
—	—	JOLLY, '04	Arch. d'Anat. micros., 6
—	—	CHAMPY, '13	Arch. Zool. exp. et gen., 52
—	—	MEEK, '13	Phil. Trans. Roy. Soc., London, 203 B
—	—	CHAMPY, '13	Arch. Zool. exp. et gen., 52
—	—	RETZIUS, '81	Biol. Untersuchungen, '81
—	Perenyi; Bou.	JANSSENS, '00 " '01 " '02 " '04	Anat. Anz., 17 La Cellule, 19 Anat. Anz., 21 Anat. Anz., 24

Species	Diploid	1st-Cyte	2nd-Cyte
Triton taeniatus	—	12–14 ♀	—
Triton taeniatus	—	12 ♀	12 ♀
Triton vulgaris	18–24 spg	—	—
Triton vulgaris	12 parth, som	—	—
Triton	Prob. 24 som	—	—
Triton	24 spg	12	—
Amblystoma tigrinum	28 som	—	—
Proteus anguineus	18 spg	9	9

III. REPTILIA

Chrysemis marginata	—	17	—
Cistudo carolina	—	16	—
Anguis fragilis	—	12 ♀	—
Anguis fragilis	36 ? som	18 ♀	—
Lacerta agilis viridis	Prob. 24 spg (20–28)	Prob. 12 (10–15)	—
Lacerta stirpium	24 oog	8–12 ♀	—
Anguis fragilis	ca. 43=19 macro+24 ? micro. spg	22=10 macro+12 micro.	a. 10 macro, b. 9 macro, micro uncertain
Sphenodon	Unable to determine numbers	—	—

AMPHIBIA-Continued

Remarks	Fixative	Author	Reference
—	—	Born, '94	Arch. mikr. Anat., 43
—	—	Carnoy et Lebrun, '99	La Cellule, 16
—	—	Champy, '13	Arch. Zool. exp. et gen., 52
Sperm destroyed with radium.	—	Hertwig, O., '13	Arch. mikr. Anat., 82
—	—	Rabl, '85	Morph. Jahrb., 10
—	—	Moore & Embleton, '05 Moore & Arnold, '05	Proc. Roy. Soc., London, 77 Proc. Roy. Soc., London, 77
Epithelium, gill plate, peritoneum, mesentery, lung.	Flem.; Her.; Bou.; Bou.-Al.	Parmenter, '19	Jour. Morph., 33
1st equational and 2nd reductional.	Sub. with or without 5% acet.; Car.; Picro-Sub.	Stieve, '18 " '20	Anat. Anz., 51 Arch. mikr. Anat., 93
Bipartite X to one pole in 1st.	—	Jordan, '14	Sci., 39
Bipartite X to one pole in 1st.	—	Jordan, '14	Sci., 39
—	—	Loyez, '05	Arch. de l'Anat. mikr., 8
—	—	Trinci, '08	Mem. R. Accad. Sc. Bologne, Ser. VI, 5
—	—	Tellyesniczky, '97	Math. u. Nat. Ber. Hungarn, 13
—	—	Loyez, '05	Arch. de l'Anat. mikr., 8
One of 10 macros undivided to one pole in 1st. X-0 in male.	Flem.	Dalcq, '21	Arch. Biol., 31
No sign of sex chroms.	—	Hogben, '21	Jour. Roy. Mic. Soc.

Species	Diploid	1st-Cyte	2nd-Cyte
Thamnophis butleri	37 spg 38 ♀ prob.	18	a. 18=17+double X b. 18=17+single Y
Anolis carolinensis	12 macro + 22? micro spg 14 macro ♀ and som	5 macro+bipartite X+11 micro	a. 5 macro+bipartite X+11 micro? b. 5 macro+11 micro ?
Cnemidophorus gularis	—	13 macro+7 micro	—
Crotaphytus collaris	12 macro+24–26 micro spg	6 macro+12 micro	—
Holbrookia texana	12 macro+22 micro spg	5 macro+bipartite X+? micro	a. 5 macro+bipartite X+? micro b. 5 macro+? micro
Sceloporus undulatus var. *consobrinus*	12 macro+18 micro spg	5 macro+bipartite X+? micro	a. 5 macro+bipartite X+ ? micro b. 5 macro+? micro
Sceloporus spinosus	12 macro+10 micro spg	6 macro+5 micro	—
Uta ornata	12 macro+ca. 18 micro spg	5 macro+bipartite X+? micro	a. 5 macro+bipartite X+? micro b. 5 macro+? micro
Natrix tigrina	40 spg	20	20
Agkistrodon blomhoffii	36 spg	18	18
Elaphe quadrivirgata	36 spg	—	—
Tachydsomus tachydromoides	38 spg	19	19
Elaphe climacophora	36 spg	18	18

REPTILIA-Continued

Remarks	Fixative	Author	Reference
Prob. XX-Y in male.	Flem.; Flem.-Han.; Bou.-Al.	THATCHER, '22	Sci., 56
Bipartite X undivided to one pole in 1st. Prob. XX-0 in male.	Flem.-Han.; Bou.-Al.	PAINTER, '21	Jour. Exp. Zool., 34
Bipartite X undivided to one pole in 1st.	"	"	"
Prob. XX-0 in male.	"	"	"
Bipartite X undivided to one pole in 1st.	"	"	"
Bipartite X undivided to one pole in 1st.	"	"	"
X undivided to one pole in 1st.	"	"	"
Bipartite X undivided to one pole in 1st.	"	"	"
ZZ in male.	3% Osmic 4 1.5% Chrom. 8 4.5% K-bichromate 8	NAKAMURA, '28	Mem. Coll. Sci., Kyoto Imp. Univ., Ser. B vol. IV
ZZ in male.	"	NAKAMURA, '27	Proc. Imp. Acad., 3
ZZ in male.	"	"	"
ZZ in male.	"	NAKAMURA, '28	Proc. Imp. Acad., IV
ZZ in male.	"	NAKAMURA, '29	Zool. Magazine, Tokyo, 41

Species	Diploid	1st-Cyte	2nd-Cyte
			IV. AVES
1. Anseres			
Anas boschas *Aythya ferina* *Cairina moschata* *Lamprocesa sponsa* *Mareca penelope*	ca. 16 spg	8	8
Anas sp. 'Indian runner duck'	76 ♂ som 77 ♀ som (amnion, chorion, allantois from 5–21 days embryos.)	38	—
2. Columbae			
Columba livia domestica	16 spg	8	4 (occasionally 8)
Columba domestica	16 cl	8 ♀	8 ♀
Columba	ca. 16	8	4
Turtur risirius	16 spg	8	4 (occas. 8)
Columba livia domestica	62 spg, som 61 ♀ (embryo)	31	31
3. Gallinae			
Gallus domesticus	—	6 ? ♀	—
Gallus 'Huhn'	—	8–16 (pairs) (prob. 12) ♀	—
Gallus gallus domesticus (common fowl)	17 (19) spg	9	4, 5 (fusion in pairs, may be imcomplete giving 6, 7 etc.)
Gallus gallus domesticus	18 spg 18 ♂ som	9	4, 5 (fusion in pairs)
Gallus domesticus	12 ? parth cl.; 12 som	—	—

Continued

Remarks	Fixative	Author	Reference
—	—	Schöneberg, '13	Arch. mikr. Anat., 83
X-X in male=74+XX; XX-Y in female=74+XXY.	Bou.-Al.	Werner, '25 " '27	Anat. Rec., 31 Biol. Bull., 52
Second pairing of chroms. before 2nd div.	Flem.; Her.; Gil.; 1% $PtCl_4$ 50 Sat. Sub. 50 acet. 5	Guyer, '00 " '02	Dissertation Univ., Chicago. Bull. Univ., Cincinnati, No. 22
—	Picro-acet. mix.	Harper, '04	Am. Jour. Anat., 3
Second pairing of chroms. before 2nd div.	—	Smith, '12	Q. J. M. S., 58
Second pairing of chroms. before 2nd div.	—	Guyer, '00 " '02	Dissertation Univ., Chicago. Bull. Univ., Cincinnati, No. 22
XX in male, XO in female according to largest chroms.	Her. with 1% Urea at ca. 40°C.	Oguma, '27	Jour. Coll. Agr. Hokk. Imp. Univ., XVI
—	—	Loyez, '06	Arch. d'Anat. micros., 8
—	—	Sonnenbrodt, '08	Arch. mikr. Anat., 72
X undivided to one pole in 1st. Heterogametic in male.	Gil.; Bou.; Smear.	Guyer, '09	Anat. Anz., 34
X undivided to one pole in 1st. Tids without X (with only 4 autosomes) degenerate. X is 2 elements in spg and ♂ som; X is 1 element in oog and ♀ som. ♂ homogametic, ♀ heterogametic.	Gil.; Flem.; Her.; Bou.	Guyer, '16	Biol. Bull., 31
Prob. no reduction.	—	Legaillon, '10 " '10	C. R. Soc. Biol., 69 Arch. d'Anat. micros., 12

Species	Diploid	1st-Cyte	2nd-Cyte
Gallus (Gold Campine fowl)	18–20 spg	8–10	—
Gallus 'chicken'	—	—	—
Gallus 'chicken'	ca. 32 spg	—	—
Gallus 'chicken'	30–34 ♂, ♀ som	—	—
Gallus domesticus	35–36 ♂, ♀ som, spg. (from 14–19 days incubated embryos)	—	—
Gallus domesticus	60–70 in prophase. 35–40 in metaphase. (from tissue culture and embryos)	—	—
Gallus domesticus	32 ♂ som 32 ♀ som	—	—
Gallus 'Huhn'	36–38 (Bankiva embryo) 42–44 (emb) (F, Seiden ♀ × Bank. ♂) 32; (emb.) (F, Bank. ♀ × Seiden ♂); ca. 30–32 (Barnenelder emb.); ca. 33 (Ankona emb.); 32 (Ankona spg.)	—	—
Gallus domesticus	74 spg; ♂ som 73 oog; ♀ som	37	37 = 36 + X
'Huhn'	36–38 som	—	—
'Domestic fowl'	—	—	—
Meleagris sp. (Truthennen)	46 ♂ som 46 ♀ som (Amnion)	—	—
Numidia meleagris dom. (guinea fowl)	17 spg	9	8, 9
Phasianus (Pheasant)	20–22 spg	10–11	8
'Pheasant × fowl'	18–20 spg	—	—

AVES-Continued

Remarks	Fixative	Author	Reference
Clumping in 2nd Cyte.	Bou.; Sub.	CUTLER, '18	Jour. Genet., 7
Unable to confirm Guyer's an X in male.	Gil.; Flem.; Her. (sometimes at 38°C.)	BORING & PEARL, '14	Jour. Exp. Zool., 16
Miss Stevens' fig.	—	BORING, '23	Sci., LVIII.
A largest chrom. in ♀ prob. X.	—	HANCE, '23	Anat. Rec., 26
♀ heterogametic according to a largest chrom.	Flem. with ca. 0.5% Urea at ca. 0°C.	HANCE, '26	Jour. Morph., 43
♀ heterogametic, XO.	—	HANCE, '26	Biol. Bull., 50
XX in male, XY in female.	—	SHIWAGO, '24	Sci. LX
XX in male.	Flem.-Han.; Zenk.; Rabl; Bou.-Al.	AKKERINGA, '27	Zeit. mikr.-anat. Forsch., 8
XX in ♂ according to 2 smallest V chrom. XO in ♀, a smallest V chrom.	—	SUZUKI, '30	Zool. Magazine, Tokyo, 42
Tissue culture	—	KEMP, '30	Zeit. Zellf. mikr. Anat., 11
2 large V-chroms. (2X) in male, 1 V in female.	24 hrs in 1% chromic 15 2% k-Bichromate 4 acetic 1	GOLDSMITH, '28	Jour. Morph., 46
ZZ in male ZW in female.	Bou.-Al.	SHIWAGO, '27	Zeit. Zellf. mikr. Anat., 9
X undivided to one pole in 1st. Second pairing of chroms. before 2nd div. 4 or 5 in tids.	Gil.; Bou; smear.	GUYER, '09	Anat. Anz., 34
Second pairing and fusion in 2nd div.	Bou.; Sub.	CUTLER, '18	Jour. Genet., 7
Sterile male	—	CUTLER, '18	Jour. Genet., 7

Species	Diploid	1st-Cyte	2nd-Cyte
			V. MAMMALIA
1. Monotremata			
Echidna *Ornithorhynchus*	—	8–12	—
2. Marsupialia			
Didelphys aurita	—	21 ? ♀	12 ? ♀
Didelphys virginiana (=Opossum)	17 spg 17 som	9	4, 5 (8, 9 univalents)
Didelphis virginiana	—	11 ♀	—
Didelphis virginiana	22 spg. ♂ som 22 ♀	11	a. 11=10+X b. 11=10+Y
'Marsupialia'	—	—	—
Perameles *Phalangista*	—	8	—
Phascolarctus cinereus	16 spg 16 ♀ som	8	a. 8=7+X b. 8=7+Y
Sarcophilus ursinus	14 spg 14 ♀ som	—	—
Dasyurus maculatus	14 spg	—	—
Macropus ualabatus	12 spg 12 ♀ som	6	a. 6=5+X b. 6=5+Y
Petauroides volans	22	—	—
Phascolomys mitchelli	—	7	—
Potorous tridactyla	12 spg 12 ♀ som	6	a. 6=5+X b. 6=5+Y
Pseudochirus peregrinus	20 spg 20 ♀ som	10	a. 10=9+X b. 10=9+Y
Trichosurus vulpecula	20 spg 20 ♀ som	10	a. 10=9+X b. 10=9+Y
Didelphis virginiana	22 ♂ som 22 ♀ som ca. 8n number (Giant cells of spleen)	—	—

Continued

Remarks	Fixative	Author	Reference
—	—	Benda, '06	Semon Zool. Forsch. Australia u. Malay Archipel.
—	—	Hill, '18	Q. J. M. S., 63
X undivided to one pole in 1st. Second pairing before 2nd div.	Zenk.; Bou.; Sub.; Flem.	Jordan, '11	Arch. Zellf., 7
—	Bou.	Hartman, '19	Jour. Morph., 32
XY in male.	Bou.-Al.; Flem.-Han.	Painter, '21 " '22 " '24	Sci., 53 Jour. Exp. Zool., 35 Jour. Exp. Zool., 39
4 chroms. often in tids.	—	Von Bardeleben, '98	Jen. Zeits., 24
—	—	Benda, '06	Semon Zool. Forsch. Australia u. Malay Archipel.
XY in male, XX in female.	Bou.; Bou.-Al.; Cold Flem.; Sub.-acet.	Greenwood, '23	Q. J. M. S., 67
XY in male, XX in female.	"	Greenwood, '23	Q. J. M. S., 67
XY in male.	"	Greenwood, '23	Q. J. M. S., 67
XY in male. X attachls one autosome in gonial mitosis. XX in female.	Flem.; Bou.	Agar, '23	Q. J. M. S., 67
Prob. XY in male.	"	Agar, '23	Q. J. M. S., 67
X and Y to opposite poles in 1st.	—	Altmann & Ellery, '25	Q. J. M. S., 69
XY in male.	—	Altmann & Ellery, '25	Q. J. M. S., 69
XY in male.	—	Altmann & Ellery, '25	Q. J. M. S., 69
XY in male.	—	Altmann & Ellery, '25	Q. J. M. S., 69
XY in male, XX in female.	Bou.; Flem.-Han.; Car.-Lebrun; Bou.-Al.	Hoy & George, '29	Jour. Morph. 47

Species	Diploid	1st-Cyte	2nd-Cyte
3. Edentata			
Tatu novemcinctum (9-banded Armadillo)	31 ? spg 32 oog	16 ♀	--
Tatu novemcinctum	60 ♂, ♀ som (amnion)	—	—
4. Ungulata			
A; *Bos*			
'Stier'	16 spg	—	—
'Taureau'	24 spg (20–25)	12	12
'Taureau'	Prob. 24 spg (20–24)	12	—
Bos taurus	33 spg	17	a. 16 b. 17=16+X
Bos taurus (cattle)	37 spg, ♂ som 38 oog, ♀ som	19 Prob. 19♀	a. 18 b. 19=18+X
Bos taurus (Rinde)	ca. 60 spg (58–59)	30	—
B; *Equus*			
'Pferde'	—	10–16	—
'Horse'	37 spg	19	a. 9 b. 10=9+X
'Mule'	51 spg	34–49 (mostly 40–45)	—
Equus caballus	33–38 spg	19	a. 18 b. 19=18+X
Equus 'Horse'	Prob. 60 spg (57)	30	—
C; *Sus*			
'Pig'	18 spg 18 som ♂ 20 som ♀	10	a. 8 b. 10=8+2X

MAMMALIA-Continued

Remarks	Fixative	Author	Reference
Prob. XO in male.	Zenk.; Flem.; Gil.; Zenk.-Form.; Petrunkewitschi.	Newman & Patterson, '10	Jour. Morph., 21
		Newman, '12	Biol. Bull., 23
Prob. XY in male.	—	Painter, '25	Sci., 61
		" '25	Am. Nat., 59
8 in tids.	—	Von Bardeleben, '92	Verh. Anat. Gesell., '92
—	Sub.-alc.-acet.; Flem.; Her.	Schoenfeld, '02	Arch. Biol., 18
—	—	Van Hoof, '13	La Cellule, 30
XO in male. X undivided to one pole in 1st.	Flem.; Cham.; Bou.; Car.	Masui, '19	Jour. Coll. Agr. Imp. Univ., Tokyo, 3
XO in male. X undivided to one pole in 1st. XX in female.	Her.; Gil.; Flem.; Bou.; Bou. at 38°C.	Wodsedalek, '20	Biol. Bull., 38
—	Bou.-Al.; Flem.-Han.; 2% Osmic 1 Sub. 2 Urea small part.	Krallinger, '27	Verh. Anat. Gesell., '27
—	—	Kirillow, '12	Arch. mikr. Anat., 79
XO in male. X undivided to one pole in 1st. Second pairing of chroms. in telophase of 1st div.	Bou.; Gil.	Wodsedalek, '14	Biol. Bull., 27
One X in spg. Multipolar mitoses occur in gonia.	Flem.	Wodsedalek, '16	Biol. Bull., 30
XO in male. X undivided to one pole in 1st.	Flem.; Bou.; Cham.	Masui, '19	Jour. Coll. Agr. Imp. Univ., Tokyo, 3
XY in male.	Bou.-Al.	Painter, '24	Jour. Exp. Zool., 39
2X undivided to one pole in 1st. In tids, 4 or 6 elements due to second pairing after 2nd div.	Bou.; Zenk.; Tellyes.; Sub.	Wodsedalek, '13	Sci., 38
		" '13	Biol. Bull., 25

Species	Diploid	1st-Cyte	2nd-Cyte
Sus scrofa	40 spg 40–58–74 som	20	—
5. Carnivora			
A; *Canis*			
Canis	64 ? som	—	—
Canis 'Dog'	21 spg 22 ♀ som	11	a. 10 b. 11=10+X
'Dog'	50, Prob. 52	—	—
Canis familiaris	78 spg 78 oog	39	a. 39=38+X b. 39=38+Y
B; *Nyctereutes viverrinus* (Racoon dog)	42 spg	21	a. 21=20+X b. 21=20+Y
C; *Felis*			
'Chat'	35 spg 36 oog 36 som	18 12 ♀ ('09)	a. 17 b. 18=17+X
'Chatte'	—	12 ♀ (at least)	—
'domestic cat'	—	14–17 ♀	14–16 ♀
'Hauskatze'	38 oog	—	—
Felis domestica	38 spg	19=18+XY	—
D; *Herpestes*			
'Mongoose'	—	ca. 24	—
6. Rodentia			
A; *Cavia*			
'Meerschweinchen'	16 spg	—	—
'Meerschweinchen'	Prob. 24 som	—	—
'Guinea-pig'	32 spg	16	16

MAMMALIA-Continued

Remarks	Fixative	Author	Reference
Variation in somatic number due to fragmentation.	Flem. with 0.5% Urea at 4°C.	HANCE, '17 " '18	Jour. Morph., 30 Biol. Bull., 35
——	—	VOM RATH, '94	Biol. Centralb., 14
X undivided to one pole in 1st.	—	MALONE, '18	Trans. Am. Micr. Soc., 37
Prob. XY in male.	—	PAINTER, '25	Am. Nat., 59
XY in male. XX in female.	Cham. for testis; Ben. or Flem. without acet, diluted with water for young gonads.	MINOUCHI, '28	Jap. Jour. Zool., 1
XY in male.	Flem. without acet.; Cham.	MINOUCHI, '29	Cytologia, 1
X in male, undivided to one pole in 1st. 2 X in female.	Flem.; Sub. 99 1% chrom. 1	WINIWARTER et SAINMONT, '09 WINIWARTER, '14 WINIWARTER, '19	Arch. Biol., 24 Bull. Acad. Roy. Belgique. Arch. Biol., 30
——	Flem.; Ben.; Her.	VAN DER STRICHT, '11	Arch. Biol., 26
——	Zenk.; Gil.; Flem.	LONGLEY, '11	Am. Jour. Anat., 12
——	Car.; Flem.; Mev.; Bou.; Sub.-acet.	GUTHERZ, '18 " '20	Sitzb. Gesell. Nat. Frenn., No. 8 Arch. mikr. Anat., 94
XY in male.	Flem. without acet.	MINOUCHI, '28	Proc. Imp. Acad. Japan, 1
Prob. XO in male. Second pairing of chroms. before 2nd div.	Flem.	JORDAN, '14	Carnegie Inst. Pub., 182
8 in tids.	—	VON BARDELEBEN, '92	Verh. Anat. Gesell., '92
——	Chrom.-acet. mix.	FLEMMING, '98	Anat. Anz., 14
——	—	MOORE & WALKER, '06	Liverpool Univ. Rep., '06

Species	Diploid	1st-Cyte	2nd-Cyte
'Guinea-pig'	56 ? spg	28	—
Cavia porcellus	—	24–28 ♀	ca. 24 ♀
'Cobaye'	16 som	8 ♀	8 ♀
Cavia cobaya	38 spg	19	a. 19=18+X b. 19=18+Y
Cavia cobaya	65 spg 44–55–66 som	33	a. 32 b. 33=32+X
'Guinea-pig'	62±2 (60–64) spg	31	No less than 30
Eliomys quercinus	—	16 ♀	16 ♀
B; *Lepus*			
'Kaninchen'	24 ? som	—	—
'Lapin'	41–43 oog 36–46 som (mostly 42)	10–12 ♀	—
'Rabbit'	28–36 spg	14–18	—
'Rabbit'	22 spg	12 (11)	a. 11=10+X b. 11=10+Y
'Rabbit'	44–54 spg	more than 20	—
'Rabbit'	44 spg 44 ♂ som 44 ♀ som	22	—
Microtus incertus	—	28–34 ♀	28–34 ♀
C; *Mus*			
(1) Rat			
'Rat'	32 spg	16	—

MAMMALIA-Continued

Remarks	Fixative	Author	Reference
XY in male.	Flem.; Her.; Flem.-Mev.	Stevens, '11 " '11	Biol. Bull., 20 Biol. Bull., 21
——	Zenk.; Bou.; Flem.	Athias, '12	Arch. R. Inst. Bacter. Cam. Pest. Lisbonne, 3
——	Flem.; Ben.; Sub.; Bou.; Her.	Lams, '13	Arch. Biol., 28
XY in male.	Flem.-Han.	Harman & Root, '26	Biol. Bull., 57
X0 in male. X undivided to one pole in 1st.	Flem. with trichloracetic; Bou.-Al.; Flem.	Mols, '28	Arch. Biol., 37
XY in male.	Bou.-Al.	League, '28	Jour. Morph., 46
——	—	Athias, '09 Athias, '12	Anat. Anz., 34 Arch. R. Inst. Bacter. Cam. Pest. Lisbonne, 3
——	Chrom.-acet. mix.	Flemming, '98	Anat. Anz., 14
——	Flem.; Her.; Sub.-alc.-acet.; Sub.-alc.-$PtCl_4$-acet.	Von Winiwarter, '99 " '00	Arch. Biol., 16 Arch. Biol., 17
——	—	Barrat, '07	Proc. Roy. Soc., London., 79B
XY in male. XY sometimes double in 1st, then 11 in 1st-Cyte.	Flem.; Bou.	Bacahuber, '16	Biol. Bull., 30
X0 in male. X undivided to one pole in 1st.	Flem. with Urea at 15°C.; Cham.	Masui, '23	Jour. Coll. Agr. Imp. Univ. Tokyo, 8
XY in male. XY to opposite pole in 1st. XX in female.	Bou.-Al.	Painter, '26 "	Sci., 64 Jour. Morph., 43
——	—	Athias, '12	Arch. R. Inst. Bacter. Cam. Pest. Lisbonne, 3
Earlier accounts of Moore corrected in '05.	—	Moore, '93 " '94 Moore & Arnold, '05 Moore & Walker, '06	Anat. Anz., 8 Intern. Monastschr., 11 Proc. Roy. Soc., London, 77B Univ. Liverpool Rep., '06

Species	Diploid	1st-Cyte	2nd-Cyte
'Ratte'	—	12	—
'Wanderratte'	16 ? spg	8	8
'Rat'	20–30 spg	ca. 12	—
Mus decumans var. *albinos*	24 som, prob.	12 (prob.)	12 (prob.)
'Weisse Ratte'	—	16♀ (10–20)	16 ? ♀ (8–16)
Mus decumans albinos	More than 24 spg	16	Prob. 16
Mus norvegicus albinus	40 threads in pachytene of oocyte	—	—
Mus norvegicus albinus	37 spg 37 ♂ som	19	—
Mus rattus albus	—	8 ♀	8 ♀
Mus rattus albinos	More than 24 spg	16	Prob. 16
Mus sylvaticus	—	—	—
Mus decum. alb. (Ratte)	40 spg	—	—
Rattus rattus	40 spg	20	20
Rattus norvegicus	42 spg	21	21
Mus norvegicus	42 spg	21	—
'Mixed rat strain' (Rattus norvegicus alb. × R. norvegicus = wild rat)	62 spg (mix) 42 spg (mix) 42 spg (white rat) 42 som (mix) 62 spg (wild rat) 42 spg (wild rat) 62 som (mix)	21 21 21 21 21	a. 21, b. 31 a. 21, b. 31 21 a. 21, b. 31 a. 21, b. 31
'Mixed rat strain' (R. norv. alb × R. norv. = wild rat)	42 ♀ som 62 ♀ som	21, 31 in polar spindle.	—
Mus norvegicus albus	42 spg	21	a. 21 = 20 + X b. 21 = 20 + Y
Mus rattus	42 spg	21	a. 21 = 20 + X b. 21 = 20 + Y

MAMMALIA-Continued

Remarks	Fixative	Author	Reference
——	—	LENHOSSEK, '98	Arch. mikr. Anat., 51
——	Flem.	VON EBNER, '99 " '02	Sitz. Ber. d. k. Acad. Wissen., Wien, 108 Kölliker's Gewebelehre des Menschen, III
——	—	REGAUD, '01 " '01 " '09	C. R. Soc. Biol., 53 Arch. d'Anat. micros., 4 Arch. d'Anat. micros., 11
——	Flem.; Her.; Sub.-acet.; Ben.	DUESBERG, '08 " '08	Arch. Zellf., 1 Arch. Zellf., 2
——	--	SOBOTTA & BARKHARD, '10	Anat. Hefte, 42
——	--	VAN HOOF, '11	La Cellule, 27
——	Zenk.; Bou.; Flem.; Sub.-acet.	PRATT et LONG, '17	Jour. Morph., 29
XO in male. X undivided to one pole in 1st.	Bou. with 1.5 gr chrom. and 2 gr Urea at 38°C.	ALLEN, '18	Jour. Morph., 31
——	—	MELISSINOS, '07	Arch. mikr. Anat., 70
——	—	VAN HOOF, '11	La Cellule, 27
Prob. one X in male.	—	FEDERLEY, '19	Act. Soc. Sci. Fenn., 48
——	Car.; Zenk.; Tellyes.	RAUH, '25	Zeit. Anat. Entwickl., 76
XY in male.	Bou.-Al.	PINCUS, '27	Jour. Morph., 44
XY fn male.	Bou.-Al.	PINCUS, '27	Jour. Morph., 44
XY in male.	Bou.-Al.	PAINTER, '28	Genetics, 13 Sci., 64
Results of mating experiment indicate that the individual with 52 dip. number has not been established.	Bou.-Al.	SWEZY, '28	Jour. Exp. Zool., 51
——	Bou.-Al.	SWEZY, '29	Jour. Morph., 48
XY in male.	Cham.; Flem. without acet.	MINOUCHI, '28	Jap. Jour. Zool., 1
XY in male.	Car.-Flem. after Oguma et Kihara	OGUMA, '28	Zool. Magazine, Tokyo, 40

Species	Diploid	1st-Cyte	2nd-Cyte
(2) Mouse			
Mus musculus, var. *blanche et noire*	20 ? cl	20 ♀	20 ♀
'Maus'	—	16	—
'Grau Maus'	24 ? oog	6 grs. of 4 in ♀	—
'Maus, weiss, grau und Tanz'	30 cl	16 ♀ (10–19)	16 ? ♀
'Souris blanche'	12 spg (10–12)	12 (16)	12 (16)
'Mouse'	24 spg	—	—
Mus musculus	—	12 ♀	12 ♀
Mus musculus	—	12 ♀ (12–15)	12 ♀
Mus musculus var. *alba.*	—	8 ♀	8 ♀
'White mouse'	—	12 ♀ (12–24)	12 ♀
'Mouse, white, black and hybrid'	—	20 ♀	20 ♀
'White mouse'	—	12–24 ♀	12–30 ♀
'House mouse'	—	20	20
'Mouse, domestic and wild'	40 spg	20	20
'Mouse, wild and domestic'	40 spg	20	20
Mus musculus	40 spg	20	—
Mus wagneri var. *albula*	40 spg	20	a. 20=19+X b. 20=19+Y

MAMMALIA-Continued

Remarks	Fixative	Author	Reference
——	—	TAFANI, '89	Atti R. Accad. Lincei, Rendiconte Ser. 4
——	1% $PtCl_4$ 15 2% Osmic 4 acet. 1	HERMANN, '89	Arch. mikr. Anat., 34
——	—	HOLL, '93 " '93	Verh. Anat. Gesell., '93 Sitz. Ber. d. k. Akad. Wissen, Wien, 102
Earlier accounts corrected in '07.	—	SOBOTTA, '93 " '95 " '07 " '08	Verh. Anat. Gesell., '93 Arch. mikr. Anat., 45 Anat. Hefte, 35 Verh. Phys-med. Gesell., 39
6 (8) in tids.	—	LUKIANOW, '98	Arch. Sc. Biol. St. Petersburg, 6
——	—	MOORE & ARNOLD, '05	Proc. Roy. Soc., London, 77B
——	—	GERLOCH, '06	Über die Bildung der Richtungskorper bei Mus musculus.
——	Flem.; Her.; Ben.; Sub.-acet.; Bou.	LAMS et DOORME, '07	Arch. Biol., 23
——	—	MELISSINOS, '07	Arch. mikr. Anat., 70
——	—	COE & KIRKHAM, '07 KIRKHAM, '07 KIRKHAM, '08	Sci., 25 Biol. Bull., 12 Trans. Connecticut Acad. Arts & Sc., 13
——	—	LONG, '08 LONG & MARK, '11	Sci., 27 Carnegie Inst. Pub., 142
——	Car.; Flem.; Her.; Bou.	KINGERY, '14 " '17	Biol. Bull., 27 Jour. Morph., 30
X to one pole in 2nd. 19 and 20 in tids.	—	YOCUM, '17	Univ. Calif. Pub., 16
XY in male.	Flem. with Urea at 15°C; Cham.	MASUI, '23	Jour. Coll. Agr. Univ. Tokyo, 8
XY in male. XY to opposite pole in 1st.	Bou.-Al.	COX, '26	Jour. Morph., 43
XY in male.	Bou.-Al.	PAINTER, '27 " '28	Genetics, 12 Genetics, 13
XY in male.	Cham.; Flem. without acet.	MINOUCHI, '28	Jap. Jour. Zool., 1

Species	Diploid	1st-Cyte	2nd-Cyte
'Maus'	40 som (21–44) (tissue culture)	—	—
Mus musculus	ca. 21–175 som (mostly 36–40)	—	—
Sciurus 'Ecureuil'	24 som	ca. 16	—
7. Chiroptera			
Rhinolophus hipposideros	—	16 ♀	16 ♀
Vesperugo noctula	—	9–10 ♀	9–10 ♀
Vesperugo 'Bat'	No less than 24 spg	—	—
Vesperugo serotinus	—	15–22 ♀	18–24 ♀
Nyctinomous mexicanus	48 som	—	—
8. Primates			
'Brown Cebus' (Monkey)	54 spg	27	a. 27 = 26 + X b. 27 = 26 + Y
Rhesus macacus (Monkey)	48 spg 48 ♂ som 48 ♀ som	24	a. 24 = 23 + X b. 24 = 23 + Y
Homo sapiens			
'Mensch'	22–28 som (prob. 24)	—	—
'Mensch'	18–40 som	—	—
'Mensch'	8 spg	8	4
'Man'	—	18 (15–19)	—
'Mensch'	32 ?	—	—
'Man'	32 spg	16	—
'L'homme'	ca. 24 spg	12	—
'Man'	22 spg	12	a. 5 b. 7 = 5 + 2X

MAMMALIA-Continued

Remarks	Fixative	Author	Reference
Inconstant in numbers of pathologic cells (soma).	—	KEMP, '30	Zeit. Zellf. mikr. Anat., 11
"Teerkarzinome"	Zenk.; Car.; Picro-Car.; Bon.-Al.; Nawaschin.	WINGE, '30	Zeit. Zellf. mikr. Anat., 10
——	—	VAN MOLLE, '07	La Cellule, 24
——	—	ATHIAS, '12	Arch. R. Inst. Bacter. Cam. Pest. Lisbonne, 3
——	—	VAN DER STRICHT, '10	Acad. Roy. Belgique Cl. d. Sc. Mem., Ser. 2, t. 2
Prob. X undivided to one pole in 1st.	Flem.	JORDAN, '12	Anat. Anz., 40
——	—	ATHIAS, '12	Arch. R. Inst. Bacter. Cam. Pest. Lisbonne, 3
XY in male.	—	PAINTER, '25 " '25	Am. Nat., 59 Sci., 61
XY in male.	Bou.-Al.	PAINTER, '22 " '24	Sci., 56 Jour. Exp. Zool., 39
XY in male. XX in female.	Bou.-Al.	PAINTER, '22 " '24	Sci., 56 Jour. Exp. Zool., 39
Cornea	Chrom.-Acet. mix.	FLEMMING, '82 " '98	Arch. mikr. Anat., 20 Anat. Anz., 14
Normal tissue.	—	HANSEMANN, '91	Virch. Arch., 123
——	—	VON BARDELEBEN, '92 " '97 " '98	Verh. Anat. Gesell., Wien, '92 Arch. Anat. u. Phys. Suppl. Jen. Zeits., 24
——	Zenk.	WILCOX, '00	Anat. Anz., 17
——	—	FICK, '05	Arch. Anat. u. Physiol. Suppl.
——	—	MOORE & ARNOLD, '05 MOORE & WALKER, '06	Proc. Roy. Soc., London, 77B Univ. Liverpool Rep., 106
——	Flem.; Her.	DUESBERG, '06	Anat. Anz., 28
2X undivided to one pole in 1st. Second pairing of chroms. before 2nd div.	Gil.; Bou.	GUYER, '10 " '14	Biol. Bull., 19 Sci., 39

Species	Diploid	1st-Cyte	2nd-Cyte
'L'homme'	24 som 24 spg	ca. 12	ca. 18
'Mensch'	—	ca. 12	—
'L'homme'	47 spg 48 oog	24	a. 23 b. 24=23+X
'Man'	—	12	10, 11 or 12
'Man'	24 spg 33–38 som	12	12
'Man'	—	12	—
Mensch'	24 spg	12	—
'Mensch'	47–48 som (45–54)	—	—
'Mensch'	40–44 som (32–48)	—	—
'Man'	48 spg	24	a. 24=23+X b. 24=23+Y
'Mensch'	24 and 48 som	—	—
'Man'	24 som	—	—
'Mensch'	64, 30, 25, 43, 28, 52, 38 etc. som (Pleura, peritoneum of embryo)	—	—
'Mensch'	48 ♂ som 48 ♀ som (tissue culture)	—	—

MAMMALIA-Continued

Remarks	Fixative	Author	Reference
——	Flem.; Zenk.; Bou.; Mül.-form.-mercuric mix.	BRANCA, '10 " '11 " '12 " '24	C. R. Assoc. Anat., 12 Bibl. Anat., 21 C. R. Assoc. Anat. Arch. Zool. Exp. Gen. 62
No X chrom.	—	GUTHERZ, '12	Arch. mikr. Anat., 79
XO in male, XX in female. X undivided to one pole in 1st.	Flem.; Flem.-Mev.	WINIWARTER, '12 " '21 " '22 WINIWARTER et OGUMA '25 WINIWARTER et OGUMA '26	Arch. Biol., 27 C. R. Soc. Biol., 85 C. R. Soc. Biol., 86 C. R. Ass. Anat. Arch. Biol., 36
2X to one pole in 1st or 2nd. Each divides once.	—	MONTGOMERY, '12	Jour. Acad. Nat. Sci. Phila., 15
XY in male and to opposite pole in 2nd.	Acetic-bichromate mixture.	WIEMAN, '13 " '17	Am. Jour. Anat., 14 Am. Jour. Anat., 21
Double X ?	—	JORDAN, '14	Carnegie Inst. Pub., 182
——	—	FRIEDENTHAL, '20	Arch. Rass. u. Ges. Biol.
Amnion.	Picro-Sub.	GROSSER, '21	Verh. Anat. Gesell., 54
Amnion, pleura.	Zenk.-form.; Picro-Sub.; Heidenhain's Susa mix.	RAPPEPORT, '22	Arch. Zellf., 16
XY in male and to opposite pole in 1st.	Bou.-Al.; Flem.-Han.	PAINTER, '23 " '23 " '24	Jour. Exp. Zool., 37 Sci., 58 Am. Nat., 58
3 Monatenembryo (chorion, decidua)	Car.	SCHACHOW, '26	Anat. Anz., 62
8.5 mm embryo	—	ADAMSTONE, '29	Anat. Rec., 44
Inconstant in numbers of somatic.	After Ruffini as follows, Mül. 20 cc. 1% chrom. 60 cc. acet. 4 cc. Sub. 1 gr.	KARPLUS, '29	Zeit. Zellf. mikr. Anat., 10
Constant in numbers of normal somatic cells and similar to gonial number. Inconstant in numbers in pathologic cells.	Zenk.; Car.; Helly; Bou.-Al.; Flem.	KEMP, '29 " '30	Zeit. mikr. Anat. Forsch., 16 Zeit. Zellf. mikr. Anat., 11

Species	Diploid	Ist-Cyte	2nd-Cyte
'Human'	23, 37, 47, 24, 59, 48, 96, 54, 100, 140, som	—	—
'Man'	48 spg 48 ♂ som 48 ♀ som	24	a. 24=23+X b. 24=23+Y
'Man'	47 spg	24	a. 24=23+X b. 23
'Homme'	50, 52, 55 (som. parth).	—	—

MAMMALIA-Continued

Remarks	Fixative	Author	Reference
Pathologic cells.	—	Picon, '30	Arch. Espanoles, Oncologia, 1
XY in male, XX in female.	Flem. at 3°C; Bou.-Al.	Evans & Swezy, '28 " '29 " '30	Genetics, 13 Univ. Calif. Mem., 9 Jour. Morph., 49
XO in male.	1 min. in Car. and 24 hrs in Flem.; Flem.	Oguma et Kihara, '23 Winiwarter et Oguma, '25, '26 Oguma, '30	Arch. Biol., 33 See Winiwarter. Arch. Biol., 40
Evans' preparation.	—	Winiwarter et Oguma, '30	Arch. Biol., 40

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