

Brush-tailed bettong	ARYR-HSRSRSRS-----RYRRRRRR-----SRYRSRRRYYRGSRR-RRSRRRGRRGYSRRYRSRRRRR---
Red kangaroo	ARYR-HSRSRSRS-----RYRRRRRR-----SRYRSQRRYYRGRRR-RRSRR-RRRRGYSRRYRSRRRRY---
Lesser forest wallaby	ARYR-HSRSRSRS-----RYRRRRRR-----SRYRSRRXYRGRRR-RRSRRGRRRRGYSRRYRSRRRRR---
Tammar wallaby	ARYR-HSRSRSRS-----RYRRRRRR-----SRYRSRRRSGRRR-RRSRRGRRRRGYSRRYRSRRRRY---
Rufous rat kangaroo	ARYR-HSRSRSRS-----RYRRRRRR-----SRYRSRRRYYRGSRR-RRSRRRRRGYSRRYRSRRRRY---
Shrew opossum	ARYR-HSRSRSRS-----RYRRRRRR-----SRYRSRRRYYR-RSF-RRRRRGRRR-GYSRRYRSRRRRY---
Brush-tailed possum	ARYR-HSRSRSRS-----RYRRRRRR-----SRYRSRRRYYR-RSF-RRRRRGRRRRGYSRRYRSRRGRRR---
Koala	ARYR-HSRSRSRS-----RYRRRRRR-----SRYRSQRRYYRRRGSRRRRRRGRRRGY-RRYRSRRRY---
Brown marsupial mouse	ARYRRHSRSRSRS-----RYRRRRRR-----SRHHNRRRTYRRSRHHSRRRRGR-RGYSRRYSRRGRR---
Mulgara	ARYRRHSRSRSRS-----RYRRRRRR-----SRHHNRRRTYRRSRHHSRRRRGR-RGYSRRYSRRGRR---
Fat tailed dunnart	ARYRRHSRSRSRS-----RYRRRRRR-----SRHHNRRRTYRRSRHHSRRRRGR-RGYSRRYSRRGRR---
Dasyure	ARYRRHSRSRSRS-----RYRRRRRR-----SRHHNRRRTYRRSRHHSRRRRGR-RGYSRRYSRRGRRY---
Numbat	ARYRRHSRSRSRS-----RYRRRRRR-----SRHHNRRRTYRRSRHHSRRRRGR-RGYSRRYSRRGRRY---
Common planigale	ARYRRHSRSRSRS-----RYRRRRRR-----SRHHNRRRTYRRSRHHSRRRRGR-RGYSRRYSRRGRRY---
Tasmanian wolf	ARYRRHSRSRSRS-----RYRRRRRR-----SRHHNRRRTYRRSRHHSRRRRGR-RGYSRRYSRRGRRY---
Tiger quoll	ARYRRHSRSRSRS-----RYRRRRRR-----SRRGR-RRTYRRSRHHSRRRRGR-RGYSRRYSRRGRR---
Tasmanian devil	ARYRRHSRSRSRS-----RYRRRRRR-----SRRGR-RRTYRRSRHHSRRRRGR-RGYSRRYSRRGRR---
North American opossum	ARYRRRSRSRSRS-----RYRRRRRR-----SRRGR-RRRSRRR-----RRRGRRRRGYHRRSPHRRRRRRR
Rhesus macaque	ARYR-CCRSQSRS-----RCCRRRR-----RCRRRRRRRCRARRAM--RCCRRR--YRLRC-RRY---
Yellow baboon	ARYR-CCRSQSRS-----RCCRRRR-----RCRRRRRRRCRARRAM--RCCRRR--YRLRC-RRY---
Red-colobus	ARYR-CCRSQSRS-----RCCRRRR-----RCRRRRRRRCRARRAM--RCCRRR--YRRRC-RRY---
Proboscis monkey	AKSR-CCGSQSRS-----RCCRPQR-----RCRRRRRRRCRARRAM--RCCRRR--YRLRC-RRY---
Bonobo	ARYR-CCRSQSRS-----RCYRQR-----RSRRRKRQSCQTQRAM--RCCRRR--SRLRR-RRH---
Chimpanzee	ARYR-CCRSQSRS-----RCYRQR-----RSRRRKRQSCQTQRAM--RCCRRR--SRMRR-RRH---
Gorilla	ARYR-CCRSQSRS-----RCYRQR-----TSRRRRRRRCRARRAM--RCCRRR--NRLRR-RKH---
Human	ARYR-CCRSQSRS-----RYRQRQ-----RSRRRRRRSCQTRRRAM--RCCRP-YPFRC-RRH---
Gibbon	ARYR-CCRSQSRS-----RCYRRGQ-----RSRRRRRRSCQTRRRAM--RCCRP-YYLRR-RRH---
Orangutan	ARYR-CCRSQSRS-----RCCRRRQ-----RCHRRRRRCCQTRRRAM--RCCRRR--YRLRC-RRH---
Tamarin	ARYR-CCRSQSRS-----RCYRQR-----RGRRRRRRTCR-RRAS--RCCRRR--YKLT-RRY---
Squirrel monkey	ARYR-CCRSRSRS-----RCYRRRR-----RCRTRRRCCR-RRR-RR--RCCRRR--YKLT-RRY---
Flying lemur	ARYR-CCR--SRS-----RCRRRRR-----SCRRRR--CR-RRR-RR--RSCRRR--YSLRCCRY---
Rabbit	VYR-CCRSQSRS-----RCRRRRR-----RCRRRRRRCCQ-RRRV--KCCRR-YYTLRC-RRY---
Rat	ARYR-CCRSKSRS-----RCRRRRR-----RCRRRRRRCCR--RRR-RR--RCCRRRSYTFRC-KKY---
Mouse	ARYR-CCRSKSRS-----RCRRRRR-----RCRRRRRRCCR--RRR-RR--RCCRRRSYTFRC-KKY---
Guinea pig	ARYR-CCRSPSRS-----RCRRRRR-----RFYRRRRRCHR--RRR-RR--CCRRR--YTRC-KKY---
Goat	ARYR-CCLTHSRS-----RCRRRRR-----RCRRRRRRRFGRRRRR--VCCRY--TVVCTRQ---
Ram	ARYR-CCLTHSRS-----RCRRRRR-----RCRRRRRRRFGRRRRR--VCCRY--TVVCTRQ---
Bull	ARYR-CCLTHSRS-----RCRRRRR-----RCRRRRRRRFGRRRRR--VCCRY--TVIRCTRQ---
Boar	ARYR-CCRSHSRS-----RCRPRRR-----R-CRRRRRCCPRRRA--VCCRY--TVIRCRRC---
Pig	ARYR-CCRSHSRS-----RCRPRRR-----R-CRRRRRCCPRRRA--VCCRY--TVIRCRRC---
Big brown bat	ARYR-CCR--SRS-----RCRRRRR-----R-CYRRRRRCCRRRRR--VCCRY--TVIRCRRC---
Vampire bat	ARYR-CCRSPSRS-----RCRRRRR-----R-CRRRRRCCRRRRR--VCCRY--T-VRCRRR---
Flying-fox	ARYR-CCRSQSRS-----RCRRRRR-----R-CRRRRRCCRRRRR--VCCRY--T-VRCRRR---
Horse	ARYR-CCRSQSRS-----RCRRRRR-----RCRRRRRRS--VRQR--VCCRY--TVLRCRRR---
Killer whale	ARNR--CRSPSQS-----RCRRPRR-----R-CRRIRCC--RRQR--VCCRY--TTTRCARQ---
Western painted turtle	ARYR-RNRSRSRS-----RRRRRRGG--GG--RRGRRRRHGQRRRGR--GRERTR--RRRRRRRSSS---
Alligator	ARYR-HNRSRSRS-----RHRRRRGH--RGGRYRRRRRGRYGHRRH-HR--GHSRRR--RKRRSRH---
Chicken	ARYR-RSRTSRSPRSRRRRRSGR-----RRSPRRRYYGSAR--RSR-RSVGRRR--RGRRSMSRSRRRRRRN---
Japanese quail	ARYR-RTRTRSRS-----RRRRRSRR-----RRSSRRR-YYGSR--RSY-RSVGRRRRYGRRRRRRY---
Platypus	ARFR-RSRSRSRS--LYRRRRRSRR-----GGRQTRSRLKLSR-SRRRGRSR-RRKGRSRSSRSRRRN---
Echidna	ARFR-PSRSRSRS--LYRRRRRSRQSRGGRGTGPRKI TRRGGRGKSR--RRRGRSMRSRRRRRRN---
Octopus	--R-LSRRRVYS--IGGRRRRRR-----RSSGRRGRRRGRRRGRRRGRRRRRRRGGRRRR---
Short nosed bandicoot	ASYR-NSRSRSRS--RFRRRRGRSR-VGRDARQGRSSRRRRRGKGRAHSGKGRRSRSRRKNNENK---

Figure 2A.

Rat VRYRMRSPPSEGGHQGPQDHEREEQG----QGQELSPERVEDYGRTERGH-HHRHRRCC--KRLHRIHKRR-RSCRRRRRH-----SCRHRRRHRRGCRRSRRRRSCRCRKCRRWHYY
Bush rat VRYRMRSPPSEGGPHQGPQDHEREEQG----QGQELSPERVEDYGRTHRG--HHRHRRCSRKRLHRIHKRR-RSCRRRRRH-----SCCHRRRHRRGCRRSRRRRCKCRKCRRHCH
Mouse VRYRMRSPPSEGGPHQGPQDHEREEQG----QGQGLSPERVEDYGRTHRGHHHHRHRRCSRKRLHRIHKRR-RSCRRRRRH-----SCRHRRRHRRGCRRSRRRRRCRCRKCRRHHH
Red howler monkey VRYHVRSPSERPHREYRQLVNGQEQRHGQEEQGMMSAEGVEGYGRTHQGCYGYRRRLCSRRRLYRVHRRQRSCRRR-----CCRYRRRNRRGCR-TRRR-----TCRRH--
Marmoset VRYRVRSPSERPHEEYRQLVNWQEQRNGQEEQGLSAEGGEVYGRTHQGYSSYRRRRCSRRRRYRIHRRRSRSCRRRRRH-----SCRYRRRPRRGCR-SRRRR-----RCRRY--
Pygmy Chimpanzee VRYRVRSPSEPSHEVYRQQLHGQEQGHGQEEQGLSPEHVEVYERTH-GHSHYRRRHCSRRRLRRIHRQQHRSCRRRKRR-----SCRHRRRHRRGCR-TRRR-----TCRKH--
Chimpanzee VRYRVRSPSEPSHEVYRQQLHGQEQGHGQEEQGLSPEHVEVYERTH-GHSHYRRRHCSRRRLRRIHRQQHRSCRRRKRR-----SCRHRRKHRRGCR-TRRR-----TCRRH--
Gorilla VRCRVRSPSERSHEVYRQQLHGQEQGHGQEEQGLSPEHVEVYERTH-GHSHYRRRHCSRRRLRRIHRQQHRSCRRRKRR-----SCRHRRRHRRGCR-TRRR-----TCRRH--
Human VRYRVRSLSERSHEVYRQQLHGQEQGHGQEEQGLSPEHVEVYERTH-GQSHYRRRHCSRRRLHRIHRQHRSCRRRKRR-----SCRHRRRHRRGCR-TRKR-----TCRRH--
Gibbon VRYCVRSLSERSHEVYRQQLRGQEQGHGQEEQGLSPEDVEVYERTH-GHSHYRRRHCSRRRLHRIHRQQHRSCGRRRRH-----SCRQRRRHRRGCR-TRRR-----RCRRH--
Orangutan VRYCVRSLSERSHEVYRQQLHGQEQGHHDQEEQGLSPEQVEVYERTQ-GHSHYRRRHCSRRRLHRIHRQQHRSCRRRRH-----SCRHRRKHRRGCR-TRRR-----TCRRH--
Japanese-macaque VRYRMRSLSERPHEVHGQQVHGQDQGHNGQEEQGLNPEHVEVYERTHRGSHHRRRRCSRRRLHRIHRRRHRSCRRRRRH-----SCRHRRRHRRGCR-TRRR-----RCRRH--
Pig-tailed macaque VRYRMRSLSERPHEVHGQQVHGQDQGHNGQEEQGLNPEHVEVYERTHRGSHHRRRRCSRRRLHRIHRRRHRSCRRRRRH-----SCRHRRRHRRGCR-TRRR-----RCRRH--
Red guenon VRYRTRSLSERPHEVHGQQVHGQDQGHNGQEEQGLSPEHVEVYERTHQGHSHHRRRRCSQRRLHRIHRRRHRSCRRRRRH-----SCRHRRRHRRGCR-TRRR-----RCRRY--
Rhesus macaque VRYRMRSLSERSHEVHGQQVHGQDQGHNGQEEQGLNPEHVEVYERTH-GHSHYRRRHCSRRRLHRIHRRRHRSCRRRRRH-----SCRHRRRHRRGCR-TRRR-----RCRRH--
Horse ----ARTTAG-----SYRRYRRRCCSPRRLYRLRRRRYRSSRRRRRH-----PCR-RRRHRRVCRRVRRRR-----RCCR----
Pig VRCRVRSPSESP--QQGSGQORENERQD--QDQELRPEDVPVYGRTHRGYHYRHRSHTRRRRSCRRRRH-RACRHR-----RHRRGCRRIRRRRH-----CRRRL-
Bull VRCHVKSPTESPPGQQGSGQQGETEHPD--QARELRPEDI PVYGRTHRGYHYRHRSHTR---AYRRRRR-RACRHRSRGAAGPPCAPIPGTPQASRQSGCRRMRRRRRH-----CGRQL-

Figure 2B.