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Introduction
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The latest routine international evaluation for longevity trait  took place
as scheduled at the Interbull Centre. Data from twenty two  (22) populations were
included in this evaluation.

International genetic evaluations for direct longevity  trait of bulls from
Australia, Belgium, Canada, Switzerland, Germany, Denmark-Finland-Sweden
Spain, France, The United Kingdom, Ireland, Israel,
Italy, New Zealand, The Netherlands, The United States of America
Hungary, Norway, Slovenia, Czech Republic and Japan were computed. Brown Swiss, Guernsey,
Holstein, Jersey, Red Dairy Cattle and Simmental breed data were included in this evaluation.


Changes in national procedures
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Changes in the national genetic evaluation of longevity traits are as
follows:

AUS  (HOL) Drop in information due to data clean up and pedigree editing.
           Some bulls not longer qualified due to loss of herds.
BEL  (HOL) Drop in daughters, herds, EDC and reliabilities due to corrections in pedigree.
           Missing bulls because the pedigree correction removed herds and daughters.
CHE  (ALL) Change in number of herds, EDC and reliabilities due to manual data edits and hYS assignment.
DEU  (HOL) Overall base change. From this routine run onwards cow base is adjusted with each routine run, four months (birth month) forwards.
DFS  (HOL,JER,RDC) Drop in EDC mostly caused by rounding effect.
ESP  (HOL) Base changed.
           Drop in information due to new checks in data editing.
IRL  (HOL,JER,RDC) Drop in information due to correction in the pedigree based on genomic information.
ITA  (HOL) Drop in information due to changes in the input data.
           Increase in the threshold of reliability and daughters per herd meant that many bulls no longer achieved the requirements for submission.
JPN  (HOL) Changes in EDC due to pedigree editing.
NLD  (ALL) Drop in information due to pedigree corrections.
POL  (HOL) Drop in information due to data editing.
           Some bulls changed from official to unofficial due to pedigree correction.
USA  (ALL) Drop in information due to pedigree corrections and herd-year edits.


INTERBULL CHANGES COMPARED TO THE PREVIOUS ROUTINE RUN
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In 2020 new post-processing windowsâ\200\231 correlations for all breeds and traits have been applied: the upper bounds have been set to 0.99 as these were judged to have very little effect on evaluations while
the lower values have been reduced to the 10th percentile. This reduction would provide post-processed correlations to be closer to the real estimated ones. The previousy lower value adopted (based on
the 25th percentile) had been found too high causing estimated and post-processed correlations to differ significantly from each other. It is a recommendation from the Interbull Technical Committee to
review such windows every 5 years. The weight assigned to the magnitude of the changes tested by each country has also been revised. The new weight will allow post-processed correlations to take more
in consideration the value of the new estimated ones even when no changes are applied by the countries. More information can be read on https://interbull.org/ib/rg_procedure

Since 2021 a new trait group has been added to the MACE evaluation, called stcm (SNP Training for clinical mastitis) evaluating the trait cma (pure clinical mastitis). New trait group codes have been
issued as follows: 041 for international ebv files (.itb), 071 for parent average (ipr).


DATA AND METHOD OF ANALYSIS
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Data were national genetic evaluations of AI sampled bulls with at least
10 daughters or 10 EDC (for clinical mastitis and maternal calving traits at least
50 daughters or 50 EDC, and for direct calving traits at least 50 calvings or 50 EDC) in at
least 10 herds. Table 1 presents the amount of data included
in this Interbull evaluation for all breeds.

National proofs were first de-regressed within country and then analysed
jointly with a linear model including the effects of evaluation country,
genetic group of bull and bull merit. Heritability estimates used in both
the de-regression and international evaluation were as in each country's
national evaluation.

Table 2 presents the date of evaluation as supplied by each country
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Estimated genetic parameters and sire standard deviations are shown in APPENDIX I
and the corresponding number of common bulls are listed in APPENDIX II.

SCIENTIFIC LITERATURE

The international genetic evaluation procedure is based on international work
described in the following scientific publications:

International genetic evaluation computation:
     Schaeffer. 1994. J. Dairy Sci. 77:2671-2678
     Klei, 1998. Interbull Bulletin 17:3-7

Verification and Genetic trend validation:
     Klei et al., 2002. Interbull Bulletin 29:178-182.
     Boichard et al., 1995. J. Dairy Sci. 78:431-437

Weighting factors:
     Fikse and Banos, 2001. J. Dairy Sci. 84:1759-1767

De-regression:
     Sigurdsson and G. Banos. 1995. Acta Agric. Scand. 45:207-219
     Jairath et al. 1998. J. Dairy Sci. Vol. 81:550-562

Genetic parameter estimation:
     Klei and Weigel, 1998, Interbull Bulletin 17:8-14
     Sullivan, 1999. Interbull Bulletin 22:146-148

Post-processing of estimated genetic correlations:
     Mark et al., 2003, Interbull Bulletin 30:126-135
     Jorjani et al., 2003. J. Dairy Sci. 86:677-679
     https://wiki.interbull.org/public/rG%20procedure?action=print

Time edits
     Weigel and Banos. 1997. J. Dairy Sci. 80:3425-3430

International reliability estimation
     Harris and Johnson. 1998. Interbull Bulletin 17:31-36

NEXT ROUTINE INTERNATIONAL EVALUATION

Dates for the next routine evaluation can be found on
http://www.interbull.org/ib/servicecalendar.

NEXT TEST INTERNATIONAL EVALUATION

Dates for the next test run can be found on
http://www.interbull.org/ib/servicecalendar.

PUBLICATION OF INTERBULL ROUTINE RUN

Results were distributed by the Interbull Centre to designated
representatives in each country. The international evaluation file comprised
international proofs expressed on the base and unit of each country included
in the analysis. Such records readily provide more information on bull
performance in various countries, thereby minimizing the need to resort to
conversions.

At the same time, all recipients of Interbull results are expected to honor
the agreed code of practice, decided by the Interbull Steering Committee,
and only publish international evaluations on their own country scale.
Evaluations expressed on another country scale are confidential and may only
be used internally for research and review purposes.

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PUBLICATION OF INTERBULL TEST RUN
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Test evaluation results are meant for review purposes only and should not be
published.


^LTable 1. National evaluation data considered in the Interbull
evaluation for Longevity (August Routine Evaluation 2024).
Number of records for direct longevity by breed
------------------------------------------------------------------------------------------
Country        BSW          GUE          HOL          JER          RDC          SIM
------------------------------------------------------------------------------------------
AUS                         145          8664         1839         786
BEL                                      1928
CAN            270          111          13684        868          921
CHE            3250                      3379
CZE                                      5359
DEA            5253
DEU                                      24339                     308
DFS                                      15123        2739         9591
ESP                                      4602
EST
FRA            499                       18580
FRM                                                                             5094
GBR            152          339          8686         934          650          107
HUN                                      3645
IRL                                      3503         262          79
ISR                                      1791
ITA            2392                      9030         68
JPN                                      7248
KOR
LTU
LVA
NLD            235                       16669        260          94           443
NOR                                                                4009
NZL                                      8103         4665         1050
POL                                      12642
PRT
SVK
SVN            310                       691                                    521
URY
USA            1233         831          42479        5420         817          111
ZAF                                      1262         725          134
HRV
CAM                                                                45
==========================================================================================
No.Records     13594        1426         211407       17780        18484        6276
Pub. Proofs    10767        1165         157337       14208        16493        5843
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^LAPPENDIX I. Sire standard deviations in diagonal and genetic correlations below diagonal
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------------------------------------------------------------------------------------------
BSW    dlo
------------------------------------------------------------------------------------------
          CAN     CHE     DEA     NLD     USA     ITA     FRA     GBR     SVN
CAN      9.21
CHE      0.72    10.78
DEA      0.89    0.84    12.25
NLD      0.67    0.74    0.70    322.41
USA      0.91    0.64    0.85    0.74    2.65
ITA      0.79    0.71    0.86    0.62    0.71    15.81
FRA      0.65    0.81    0.77    0.69    0.69    0.54    0.97
GBR      0.85    0.59    0.64    0.61    0.84    0.65    0.62    0.32
SVN      0.67    0.68    0.82    0.71    0.70    0.74    0.69    0.58    23.33
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--------------------------------------------------------------------------------
GUE    dlo
--------------------------------------------------------------------------------
          AUS     CAN     USA     GBR
AUS      0.06
CAN      0.58    7.81
USA      0.63    0.89    2.89
GBR      0.63    0.91    0.87    0.38

--------------------------------------------------------------------------------
HOL    dlo
--------------------------------------------------------------------------------
          AUS     BEL     CAN     CHE     DEU     DFS     ESP     FRA     GBR     IRL     ISR     ITA     NLD     NZL     USA     HUN     CZE     SVN     ZAF     POL     JPN
AUS      0.04
BEL      0.64    0.38
CAN      0.61    0.88    7.01
CHE      0.72    0.78    0.82   12.24
DEU      0.66    0.86    0.87    0.87   12.39
DFS      0.68    0.85    0.86    0.81    0.92   12.18
ESP      0.56    0.81    0.87    0.79    0.83    0.76   11.29
FRA      0.56    0.65    0.66    0.78    0.66    0.69    0.64    0.94
GBR      0.68    0.90    0.90    0.79    0.86    0.82    0.88    0.62    0.31
IRL      0.58    0.85    0.78    0.67    0.75    0.70    0.76    0.45    0.80    2.11
ISR      0.61    0.58    0.51    0.71    0.71    0.71    0.58    0.57    0.59    0.58  107.63
ITA      0.54    0.69    0.76    0.74    0.75    0.69    0.89    0.70    0.78    0.64    0.57    6.22
NLD      0.53    0.66    0.65    0.72    0.69    0.75    0.61    0.66    0.63    0.47    0.68    0.53  261.54
NZL      0.65    0.68    0.68    0.75    0.75    0.70    0.54    0.49    0.67    0.66    0.51    0.50    0.50    2.22
USA      0.64    0.85    0.89    0.80    0.89    0.88    0.87    0.69    0.84    0.72    0.72    0.77    0.74    0.62    2.20
HUN      0.44    0.59    0.70    0.60    0.60    0.54    0.78    0.58    0.65    0.49    0.43    0.72    0.48    0.46    0.73    1.20
CZE      0.44    0.51    0.57    0.57    0.56    0.46    0.69    0.44    0.57    0.57    0.45    0.61    0.44    0.44    0.57    0.53   18.95
SVN      0.44    0.76    0.70    0.68    0.75    0.68    0.69    0.62    0.71    0.65    0.56    0.62    0.67    0.57    0.74    0.50    0.44   21.93
ZAF      0.61    0.81    0.89    0.72    0.83    0.75    0.86    0.58    0.86    0.86    0.53    0.71    0.47    0.66    0.86    0.69    0.61    0.64   30.29
POL      0.44    0.44    0.44    0.51    0.56    0.47    0.61    0.44    0.48    0.44    0.44    0.60    0.44    0.44    0.49    0.44    0.52    0.44    0.46   12.51
JPN      0.62    0.90    0.94    0.75    0.87    0.86    0.87    0.58    0.90    0.83    0.50    0.71    0.63    0.70    0.87    0.68    0.56    0.75    0.90    0.44    1.55

--------------------------------------------------------------------------------
JER    dlo
--------------------------------------------------------------------------------
          AUS     CAN     DFS     NLD     NZL     USA     GBR     ZAF     IRL     ITA
AUS      0.04
CAN      0.49    7.41
DFS      0.67    0.68   12.00
NLD      0.58    0.63    0.81  311.02
NZL      0.48    0.52    0.60    0.47    1.96
USA      0.59    0.82    0.79    0.75    0.55    2.34
GBR      0.52    0.88    0.71    0.62    0.53    0.79    0.29
ZAF      0.46    0.63    0.50    0.48    0.46    0.66    0.65   26.49
IRL      0.50    0.67    0.56    0.46    0.49    0.65    0.67    0.68    1.62
ITA      0.51    0.69    0.68    0.54    0.47    0.70    0.71    0.54    0.60    7.26

--------------------------------------------------------------------------------
RDC    dlo
--------------------------------------------------------------------------------
          AUS     CAN     DEU     DFS     NZL     USA     GBR     NLD     ZAF     IRL     NOR     CAM
AUS      0.05
CAN      0.53    7.37
DEU      0.65    0.84   12.64
DFS      0.63    0.75    0.91   12.99
NZL      0.63    0.57    0.70    0.56    2.54
USA      0.56    0.86    0.88    0.86    0.66    2.48
GBR      0.63    0.89    0.85    0.75    0.59    0.81    0.30
NLD      0.56    0.65    0.71    0.77    0.54    0.77    0.63  315.22
ZAF      0.50    0.89    0.78    0.59    0.57    0.81    0.82    0.48   36.12
IRL      0.53    0.74    0.72    0.66    0.60    0.63    0.71    0.47    0.79    1.56
NOR      0.52    0.76    0.70    0.80    0.45    0.81    0.72    0.80    0.63    0.53   40.80
CAM      0.43    0.69    0.75    0.75    0.55    0.86    0.68    0.71    0.62    0.43    0.62    9.34

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SIM    dlo
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          FRM      NLD      SVN      GBR      USA
FRM       0.94
NLD       0.59   286.92
SVN       0.50     0.60    22.36
GBR       0.75     0.64     0.73     0.26
USA       0.71     0.75     0.75     0.83     2.17

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^LAPPENDIX II. Number of common bulls
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BSW
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 common bulls below diagonal
 common three quarter sib group above diagonal
       CAN  CHE  DEA  NLD  USA  ITA  FRA  GBR  SVN
-----------------------------------------------------------------------------
  CAN    0  145  160   50  187  146   97   67   29
  CHE  124    0  644  119  334  535  199   80   75
  DEA  139  542    0  170  342  777  260   81   98
  NLD   43  112  157    0   89  146   89   37   46
  USA  183  312  307   78    0  263  138   97   35
  ITA  130  475  684  120  191    0  235   84   92
  FRA   88  156  208   74  101  196    0   66   48
  GBR   65   62   56   30   93   63   57    0   16
  SVN   26   69   91   46   28   86   47   13    0
-----------------------------------------------------------------------------
GUE
--------
 common bulls below diagonal
 common three quarter sib group above diagonal
       AUS  CAN  USA  GBR
-----------------------------------------------------------------------------
  AUS    0   54   69   42
  CAN   53    0   75   35
  USA   66   66    0   96
  GBR   37   30   97    0
-----------------------------------------------------------------------------
HOL
--------
 common bulls below diagonal
 common three quarter sib group above diagonal
       AUS  BEL  CAN  CHE  DEU  DFS  ESP  FRA  GBR  IRL  ISR  ITA  NLD  NZL  USA  HUN  CZE  SVN  ZAF  POL  JPN
---------------------------------------------------------------------------------------------------------------------
  AUS    0  734 1502  650 1731 1463  956 1401 1623  803  136 1152 1551 1114 2082  788  971  163  472 1202  997
  BEL  640    0  795  585 1190  949  708  998  966  538   98  785 1204  450  970  551  707  160  308  851  573
  CAN 1496  760    0  913 2618 1782 1427 1641 1948  630  172 1896 1774  662 3950 1049 1296  220  476 1763 1509
  CHE  576  587  808    0 1203  801  606  765  833  450   78  762  979  365 1070  446  573  138  252  763  517
  DEU 1329 1219 2043 1131    0 3177 1712 2728 2540  990  211 2703 3753  888 3897 1318 2152  373  544 3094 1589
  DFS 1104  902 1590  761 2562    0 1244 1970 2057  887  203 1810 2662  812 2632 1029 1591  281  513 2158 1173
  ESP  699  690  934  502 1157  989    0 1399 1286  568  130 1376 1293  518 1757  844 1019  197  445 1314 1009
  FRA  999  997 1143  709 1695 1255 1178    0 1881  839  156 1704 2263  766 2745 1048 1508  225  504 2064 1355
  GBR 1498  983 2202  828 2205 1786 1107 1415    0 1213  196 1761 2277 1001 2763 1028 1430  238  541 1876 1269
  IRL  701  527  572  458  875  752  543  708 1294    0  136  651 1024  768  930  498  641  119  335  744  521
  ISR   86   55  105   43  159  145   74   95  154  103    0  182  205  122  292  136  173   52   72  209  150
  ITA  931  790 1660  696 2052 1598 1045 1148 1581  581  121    0 1878  569 2784 1049 1398  276  413 2052 1248
  NLD 1340 1337 1663  962 3564 2468 1150 1599 2217  970  156 1683    0  969 2869 1063 1812  292  502 2340 1224
  NZL 1078  348  603  302  648  565  378  470  906  664   91  443  855    0 1031  484  633  102  337  639  549
  USA 2120  854 4370  998 3023 2248 1211 1611 2739  856  281 2344 2483  959    0 1448 2014  261  634 2763 2234
  HUN  599  464  941  373 1067  858  688  762  963  439   93  945  900  364 1426    0 1048  156  398 1096  811
  CZE  660  565  940  441 1745 1151  774 1048 1174  507  132 1103 1641  458 1681  974    0  228  432 1679 1014
  SVN  109  124  170   98  366  227  142  169  188   89   35  238  252   69  211  115  162    0   66  307  171
  ZAF  410  263  399  212  424  389  388  386  493  294   44  334  410  265  609  317  302   47    0  418  437
  POL  941  780 1552  656 2914 1910  999 1518 1815  631  160 1819 2244  486 2818 1006 1454  272  314    0 1194
  JPN  611  391  848  376  809  721  540  581  773  365   68  710  740  311 1178  493  529   96  314  715    0
---------------------------------------------------------------------------------------------------------------------
JER
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 common bulls below diagonal
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 common three quarter sib group above diagonal
        AUS  CAN  DFS  NLD  NZL  USA  GBR  ZAF  IRL  ITA
-------------------------------------------------------------------------------
 AUS      0  274  193   81  401  520  260  249   64   43
 CAN    281    0  153   47  160  497  205  167   14   37
 DFS    167  149    0  171  160  283  253  177   65   39
 NLD     72   40  174    0   76  115  122   78   47   23
 NZL    439  170  141   69    0  337  257  191  149   35
 USA    561  511  270  120  399    0  304  327   58   48
 GBR    270  208  258  121  269  352    0  202  112   45
 ZAF    241  163  162   74  200  342  212    0   43   42
 IRL     61   13   61   45  168   59  120   43    0   13
 ITA     41   35   38   20   35   50   46   41   12    0
-------------------------------------------------------------------------------
RDC
--------
 common bulls below diagonal
 common three quarter sib group above diagonal
        AUS  CAN  DEU  DFS  NZL  USA  GBR  NLD  ZAF  IRL  NOR  CAM
-------------------------------------------------------------------------------
 AUS      0  100   43  223  117  142  102   40   36   23   76   11
 CAN    103    0   13  197   54  238  116    7   70    7    8    0
 DEU     42   12    0   69   15   26   15   21    2    7   16    0
 DFS    202  205   60    0  137  230  151   60   49   24  153    0
 NZL    118   53   15  132    0   80   69   20   30   13   31    9
 USA    144  221   24  228   81    0  151   52   61   34   87   27
 GBR    101  116   15  149   67  145    0   43   50   31   77    0
 NLD     39    7   20   58   20   51   42    0    2   17   52    0
 ZAF     37   72    2   48   26   55   43    2    0    2    0    0
 IRL     22    7    7   20   13   34   31   17    2    0   64    0
 NOR     65    7   15  127   29   88   81   51    0   62    0    0
 CAM     11    0    0    0    9   27    0    0    0    0    0    0
-------------------------------------------------------------------------------
SIM
--------
 common bulls below diagonal
 common three quarter sib group above diagonal
        FRM  NLD  SVN  GBR  USA
-------------------------------------------------------------------------------
 FRM      0  124    0   65   88
 NLD    145    0   77   44   32
 SVN      0   75    0    0    1
 GBR     82   42    0    0   20
 USA    103   33    1   27    0
-------------------------------------------------------------------------------
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