

Strain: Crl:CD (SD)

No. of Laboratories : 18

|                                      | Terms used in the laboratory/<br>Related term                       | No. fetus | Bilateral | Unilateral | Unknown |
|--------------------------------------|---------------------------------------------------------------------|-----------|-----------|------------|---------|
| Supernumerary rib                    |                                                                     | 25        | 0         | 0          | 25      |
| Thoracolumbar, Full/ extra           | 14th rib/ Lumbar rib/<br>supernumerary rib, full or extra           | 22        | 9         | 12         | 1       |
| Thoracolumbar, Short/<br>rudimentary | 14th rib/ Lumbar rib/<br>supernumerary rib, short or<br>rudimentary | 201       | 70        | 117        | 14      |
| Total                                |                                                                     | 248       | 79        | 129        | 40      |

| Findings<br>(A,abnormality; V, variation) |   |                   |                               | Terms used in the laboratory/<br>Related term           | No. fetuses<br>showing finding | No.dams | No.experiments | No.Labs | Bias                                  |                                                          |
|-------------------------------------------|---|-------------------|-------------------------------|---------------------------------------------------------|--------------------------------|---------|----------------|---------|---------------------------------------|----------------------------------------------------------|
|                                           |   |                   |                               |                                                         |                                |         |                |         | No.fetuses<br>showing<br>findings/dam | No. dams<br>having<br>abnormal<br>fetuses/<br>experiment |
| Skull                                     |   |                   |                               |                                                         |                                |         |                |         |                                       |                                                          |
|                                           | A | Mandible          | Absent                        |                                                         | 1                              | 1       | 1              | 1       | 1                                     | 1                                                        |
|                                           | A |                   | Small                         |                                                         | 0                              |         |                |         |                                       |                                                          |
|                                           | A | Nasal             | Small                         |                                                         | 0                              |         |                |         |                                       |                                                          |
|                                           | A | Palatine          | Split                         |                                                         | 0                              |         |                |         |                                       |                                                          |
|                                           | A | Premaxilla        | Malpositioned                 |                                                         | 0                              |         |                |         |                                       |                                                          |
|                                           | A |                   | Small                         |                                                         | 0                              |         |                |         |                                       |                                                          |
|                                           | A | Skull             | Misshapen frontal             |                                                         | 0                              |         |                |         |                                       |                                                          |
|                                           | A | Supraoccipital    | Absent                        |                                                         | 0                              |         |                |         |                                       |                                                          |
|                                           | A | Zygoma            | Absent                        | Acrania                                                 | 1                              | 1       | 1              | 1       | 1                                     | 1                                                        |
|                                           | V | Craniofenestria   |                               |                                                         | 1                              | 1       | 1              | 1       | 1                                     | 1                                                        |
|                                           | V | Frontal           | Incomplete ossification       |                                                         | 0                              |         |                |         |                                       |                                                          |
|                                           | V | Hyoid             | Unossified                    | Incomplete ossification                                 | 12                             | 9       | 7              | 2       | 1-2                                   | 1-2                                                      |
|                                           | V |                   | Incomplete ossification       |                                                         | 4                              | 4       | 3              | 1       | 1                                     | 1-2                                                      |
|                                           | V | Interparietal     | Incomplete ossification       |                                                         | 1                              | 1       | 1              | 1       | 1                                     | 1                                                        |
|                                           | V | Parietal          | Incomplete ossification       |                                                         | 0                              |         |                |         |                                       |                                                          |
|                                           | V | Supraoccipital    | Incomplete ossification       |                                                         | 0                              |         |                |         |                                       |                                                          |
|                                           | V |                   | Bipartite ossification        |                                                         | 0                              |         |                |         |                                       |                                                          |
| Scapula                                   |   |                   |                               |                                                         |                                |         |                |         |                                       |                                                          |
|                                           | A | Scapula           | Misshapen                     |                                                         | 0                              |         |                |         |                                       |                                                          |
|                                           | V | Scapula           | Bent                          |                                                         | 0                              |         |                |         |                                       |                                                          |
| Cervial vertebrae                         |   |                   |                               |                                                         |                                |         |                |         |                                       |                                                          |
|                                           | A | Arch              | Absent                        |                                                         | 0                              |         |                |         |                                       |                                                          |
|                                           | A | Arch              | Fused                         |                                                         | 3                              | 3       | 3              | 3       | 1                                     | 1                                                        |
|                                           | A | Arch cartilage    | Split                         | Split cartilage of ventral arch                         | 0                              |         |                |         |                                       |                                                          |
|                                           | A | Centrum           | Fused                         | Fusion between occipital and the first cervical centrum | 0                              |         |                |         |                                       |                                                          |
|                                           | A | Centrum cartilage | Fused                         | Fused cervical centrum cartilage                        | 0                              |         |                |         |                                       |                                                          |
|                                           | A |                   | Split                         | Split cartilage of cervical centrum                     | 0                              |         |                |         |                                       |                                                          |
|                                           | V | Arch              | Incomplete ossification       |                                                         | 1                              | 1       | 1              | 1       | 1                                     | 1                                                        |
|                                           | V |                   | Opening of transverse foramen |                                                         | 1                              | 1       | 1              | 1       | 1                                     | 1                                                        |
|                                           | V |                   | Split                         | Bipartite ossification                                  | 0                              |         |                |         |                                       |                                                          |
|                                           | V | Centrum           |                               |                                                         | 0                              |         |                |         |                                       |                                                          |
|                                           | V |                   | Bipartite ossification        |                                                         | 1                              | 1       | 1              | 1       | 1                                     | 1                                                        |
|                                           | V |                   | Split                         | Bipartite ossification                                  | 0                              |         |                |         |                                       |                                                          |
| Thoracic vertebrae                        |   |                   |                               |                                                         |                                |         |                |         |                                       |                                                          |
|                                           | A | Arch              | Absent                        |                                                         | 0                              |         |                |         |                                       |                                                          |
|                                           | A | Arch              | Fused                         |                                                         | 2                              | 1       | 1              | 2       | 1                                     | 1                                                        |
|                                           | A |                   | Misshapen                     |                                                         | 0                              |         |                |         |                                       |                                                          |
|                                           | A | Centrum           | Absent                        |                                                         | 0                              |         |                |         |                                       |                                                          |
|                                           | A | Centrum           | Split                         |                                                         | 1                              | 1       | 1              | 1       | 1                                     | 1                                                        |
|                                           |   |                   | Dumbbell-shaped               |                                                         | 0                              |         |                |         |                                       |                                                          |
|                                           | A | Centrum cartilage | Split                         | Split cartilage of thoracic centrum                     | 0                              |         |                |         |                                       |                                                          |
|                                           | A | Centrum cartilage | Fused                         | Fused cervical and thoracic centrum cartilage           | 1                              | 1       | 1              | 1       | 1                                     | 1                                                        |
|                                           | A |                   | Dumbbell-shaped               | Dumbbell-shaped cartilage of thoracic centrum           | 1                              | 1       | 1              | 1       |                                       |                                                          |
|                                           | A | Vertebra          | Absent                        |                                                         | 2                              | 1       | 1              | 2       | 1                                     | 1                                                        |
|                                           | V | Arch              | Incomplete ossification       |                                                         | 0                              |         |                |         |                                       |                                                          |
|                                           | V | Centrum           | Bipartite ossification        |                                                         | 24                             | 23      | 23             | 6       | 1-2                                   | 1-2                                                      |
|                                           | V |                   | Dumbbell ossification         |                                                         | 45                             | 43      | 22             | 6       | 1-2                                   | 1-3                                                      |
|                                           | V |                   | Hemicentric                   |                                                         | 1                              | 1       | 1              | 1       | 1                                     | 1                                                        |
|                                           | V |                   | Incomplete ossification       |                                                         | 9                              | 8       | 8              | 2       | 1-2                                   | 1-2                                                      |
|                                           | V |                   | Split                         |                                                         | 11                             | 9       | 10             | 2       | 1-2                                   | 1-2                                                      |
|                                           | V |                   | Unilateral ossification       |                                                         | 2                              | 1       | 1              | 2       | 1                                     | 1                                                        |
|                                           | V |                   | Unossified                    |                                                         | 5                              | 5       | 3              | 3       | 1                                     | 1-2                                                      |

| Findings<br>(A,abnormality; V, variation) |                     |                                   |                                                                                                                                        | Terms used in the laboratory/<br>Related term | No. fetuses<br>showing finding | No.dams | No.experiments | No.Labs | Bias                                  |                                                          |  |
|-------------------------------------------|---------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|--------------------------------|---------|----------------|---------|---------------------------------------|----------------------------------------------------------|--|
|                                           |                     |                                   |                                                                                                                                        |                                               |                                |         |                |         | No.fetuses<br>showing<br>findings/dam | No. dams<br>having<br>abnormal<br>fetuses/<br>experiment |  |
| Lumbar vertebrae                          |                     |                                   |                                                                                                                                        |                                               |                                |         |                |         |                                       |                                                          |  |
|                                           | A                   | Arch                              | Splayed                                                                                                                                |                                               | 0                              |         |                |         |                                       |                                                          |  |
|                                           | A                   | Vertebra                          | Absent                                                                                                                                 |                                               | 0                              |         |                |         |                                       |                                                          |  |
|                                           | A                   | Vertebra                          | Supernumerary                                                                                                                          |                                               | 13                             | 12      | 12             | 3       | 1-2                                   | 1-2                                                      |  |
| V                                         | Centrum             | Bipartite ossification            |                                                                                                                                        |                                               | 0                              |         |                |         |                                       |                                                          |  |
| V                                         | Centrum             | Incomplete ossification           |                                                                                                                                        |                                               | 1                              | 1       | 1              | 1       | 1                                     | 1                                                        |  |
| V                                         |                     | Assymetry                         | Minor mishappen                                                                                                                        |                                               | 0                              |         |                |         |                                       |                                                          |  |
| V                                         |                     | Split                             |                                                                                                                                        |                                               | 0                              |         |                |         |                                       |                                                          |  |
| V                                         |                     | Unilateral ossification           |                                                                                                                                        |                                               | 0                              |         |                |         |                                       |                                                          |  |
| V                                         |                     | Dumbbell ossification             |                                                                                                                                        |                                               | 1                              | 1       | 1              | 1       | 1                                     | 1                                                        |  |
| V                                         |                     | Lumbosacral transitional vertebra |                                                                                                                                        |                                               | 5                              | 5       | 4              | 2       | 1                                     | 1-2                                                      |  |
| V                                         |                     | Sacralization                     |                                                                                                                                        |                                               | 0                              |         |                |         |                                       |                                                          |  |
| Sacral vertebrae                          |                     |                                   |                                                                                                                                        |                                               |                                |         |                |         |                                       |                                                          |  |
|                                           | A                   | Centrum                           | Misaligned                                                                                                                             |                                               | 0                              |         |                |         |                                       |                                                          |  |
|                                           | A                   | Vertebra                          | Absent                                                                                                                                 |                                               | 1                              | 1       | 1              | 1       | 1                                     | 1                                                        |  |
| V                                         | Centrum             | Unossified                        |                                                                                                                                        |                                               | 0                              |         |                |         |                                       |                                                          |  |
| V                                         | Lumbarization       |                                   |                                                                                                                                        |                                               | 2                              | 1       | 1              | 2       | 1                                     | 1                                                        |  |
| V                                         | Transverse          | Split (Split transverse process)  |                                                                                                                                        |                                               | 1                              | 1       | 1              | 1       | 1                                     | 1                                                        |  |
| Caudal vertebrae                          |                     |                                   |                                                                                                                                        |                                               |                                |         |                |         |                                       |                                                          |  |
|                                           | A                   | Vertebra                          | Absent                                                                                                                                 |                                               | 1                              | 1       | 1              | 1       | 1                                     | 1                                                        |  |
| Vertebrae                                 |                     |                                   |                                                                                                                                        |                                               |                                |         |                |         |                                       |                                                          |  |
|                                           | A                   | Atlas                             | Small                                                                                                                                  | Small atlas                                   | 1                              | 1       | 1              | 1       | 1                                     | 1                                                        |  |
|                                           | A                   | Multiple axial anomalies          |                                                                                                                                        |                                               | 0                              |         |                |         |                                       |                                                          |  |
|                                           | A                   | Sacral and caudal vertebrae       | Absent                                                                                                                                 |                                               | 0                              |         |                |         |                                       |                                                          |  |
|                                           | A                   | Vertebra                          | Misaligned                                                                                                                             |                                               | 0                              |         |                |         |                                       |                                                          |  |
|                                           | A                   | Vertebral column                  | Kyphosis                                                                                                                               |                                               | 0                              |         |                |         |                                       |                                                          |  |
| V                                         | Presacral vertebrae | Decreased                         | Reduced number of lumbar vertebra                                                                                                      |                                               | 0                              |         |                |         |                                       |                                                          |  |
| V                                         | Presacral vertebrae | Increased                         | 27 presacral vertebrae/ 7 lumbar vertebrae/ Supernumerary lumbar vertebra/ Supernumerary presacral vertebra/ Increased lumbar vertebra |                                               | 13                             | 10      | 9              | 5       | 1-3                                   | 1-3                                                      |  |
| Ribs                                      |                     |                                   |                                                                                                                                        |                                               |                                |         |                |         |                                       |                                                          |  |
|                                           | A                   | Costal cartilage                  | Fused                                                                                                                                  | Fused rib cartilage                           | 1                              | 1       | 1              | 1       | 1                                     | 1                                                        |  |
|                                           | A                   | Rib                               | Absent                                                                                                                                 |                                               | 2                              | 2       | 2              | 1       | 1                                     | 1                                                        |  |
|                                           | A                   |                                   | Fused                                                                                                                                  |                                               | 4                              | 4       | 4              | 3       | 1                                     | 1                                                        |  |
|                                           | A                   |                                   | Misaligned                                                                                                                             |                                               | 0                              |         |                |         |                                       |                                                          |  |
|                                           | A                   |                                   | Nodulated (Knobby)                                                                                                                     |                                               | 0                              |         |                |         |                                       |                                                          |  |
|                                           | A                   |                                   | Short                                                                                                                                  |                                               | 0                              |         |                |         |                                       |                                                          |  |
| V                                         | Costal cartilage    | Branched                          |                                                                                                                                        |                                               | 1                              | 1       | 1              | 1       | 1                                     | 1                                                        |  |
| V                                         |                     | Discontinuous                     |                                                                                                                                        |                                               | 13                             | 12      | 3              | 1       | 1-2                                   | 3-5                                                      |  |
| V                                         | Rib                 | Incomplete ossification           |                                                                                                                                        |                                               | 0                              |         |                |         |                                       |                                                          |  |
| V                                         |                     | Short                             |                                                                                                                                        |                                               | 0                              |         |                |         |                                       |                                                          |  |
| V                                         |                     | Short (13th rib)                  |                                                                                                                                        |                                               | 0                              |         |                |         |                                       |                                                          |  |
| V                                         | Rib                 | Wavy                              |                                                                                                                                        |                                               | 8                              | 3       | 3              | 3       | 1-6                                   | 1-6                                                      |  |
| V                                         | Supernumerary rib   | Cervical                          | Cervical rib                                                                                                                           |                                               | 7                              | 6       | 6              | 4       | 1-2                                   | 1-2                                                      |  |
| Sternebrae                                |                     |                                   |                                                                                                                                        |                                               |                                |         |                |         |                                       |                                                          |  |
|                                           | A                   | Sternebrae                        | Fused                                                                                                                                  |                                               | 2                              | 1       | 1              | 2       | 1                                     | 1                                                        |  |
|                                           | A                   |                                   | Misshapen                                                                                                                              |                                               | 0                              |         |                |         |                                       |                                                          |  |
|                                           | A                   |                                   | Misaligned                                                                                                                             |                                               | 0                              |         |                |         |                                       |                                                          |  |
|                                           | A                   | Sternoschisis                     |                                                                                                                                        |                                               | 2                              | 1       | 1              | 2       | 1                                     | 1                                                        |  |
| V                                         | Sternebra           | Asymmetric                        | Asymmetric ossification                                                                                                                |                                               | 9                              | 9       | 9              | 5       | 1                                     | 1                                                        |  |
| V                                         |                     | Dumbbell ossification             |                                                                                                                                        |                                               | 1                              | 1       | 1              | 1       | 1                                     | 1                                                        |  |
| V                                         |                     | Bipartite/Split                   | Sternebra, Bipartite ossification/ Bipartite ossification of sternebra                                                                 |                                               | 10                             | 10      | 10             | 4       | 1                                     | 1                                                        |  |
| V                                         |                     | Fused (thready)                   | Thready fusion                                                                                                                         |                                               | 0                              |         |                |         |                                       |                                                          |  |
| V                                         |                     | Misaligned                        |                                                                                                                                        |                                               | 0                              |         |                |         |                                       |                                                          |  |
|                                           |                     | Incomplete ossification           |                                                                                                                                        |                                               | 73                             | 45      | 9              | 1       | 1-5                                   | 2-10                                                     |  |
| V                                         |                     | Unossified                        |                                                                                                                                        |                                               | 14                             | 12      | 6              | 1       | 1-2                                   | 1-5                                                      |  |
| V                                         |                     | Unilateral ossification           |                                                                                                                                        |                                               | 1                              | 1       | 1              | 1       | 1                                     | 1                                                        |  |
| Forelimb/Hindlimb                         |                     |                                   |                                                                                                                                        |                                               |                                |         |                |         |                                       |                                                          |  |
|                                           | A                   | Humerus                           | Absent                                                                                                                                 |                                               | 0                              |         |                |         |                                       |                                                          |  |
|                                           | A                   |                                   | Short                                                                                                                                  |                                               | 0                              |         |                |         |                                       |                                                          |  |
|                                           | A                   | Phalanx                           | Fused                                                                                                                                  |                                               | 0                              |         |                |         |                                       |                                                          |  |
|                                           | A                   | Radius                            | Bent                                                                                                                                   |                                               | 0                              |         |                |         |                                       |                                                          |  |
|                                           | A                   | Femur                             | Absent                                                                                                                                 |                                               | 0                              |         |                |         |                                       |                                                          |  |
|                                           | A                   |                                   | Bent                                                                                                                                   |                                               | 0                              |         |                |         |                                       |                                                          |  |
|                                           | A                   |                                   | Short                                                                                                                                  |                                               | 0                              |         |                |         |                                       |                                                          |  |
|                                           | A                   | Fibula                            | Short                                                                                                                                  |                                               | 0                              |         |                |         |                                       |                                                          |  |
|                                           | A                   | Tibia                             | Short                                                                                                                                  |                                               | 0                              |         |                |         |                                       |                                                          |  |
|                                           | A                   | Radius                            | Short                                                                                                                                  |                                               | 0                              |         |                |         |                                       |                                                          |  |
|                                           | A                   | Ulna                              | Short                                                                                                                                  |                                               | 0                              |         |                |         |                                       |                                                          |  |
| Pelvic girdle                             |                     |                                   |                                                                                                                                        |                                               |                                |         |                |         |                                       |                                                          |  |
| V                                         | Pubis               | Incomplete ossification           |                                                                                                                                        |                                               | 1                              | 1       | 1              | 1       | 1                                     | 1                                                        |  |
| V                                         |                     | Unossified                        |                                                                                                                                        |                                               | 2                              | 2       | 2              | 1       | 1                                     | 1                                                        |  |
| V                                         | Ischium             | Unossified                        |                                                                                                                                        |                                               | 0                              |         |                |         |                                       |                                                          |  |

Strain: Wistar Hannover

|                                      |                                                                     | RccHanTM:WIST Lab=4 |           |            |         | BrHan:WIST@Jcl(GALAS) Lab=3 |           |            |         |
|--------------------------------------|---------------------------------------------------------------------|---------------------|-----------|------------|---------|-----------------------------|-----------|------------|---------|
|                                      |                                                                     | No. fetus           | Bilateral | Unilateral | Unknown | No. fetus                   | Bilateral | Unilateral | Unknown |
| Supernumerary rib                    |                                                                     | 0                   |           |            |         | 322                         |           |            |         |
| Thoracolumbar, Full/ extra           | 14th rib/ Lumbar rib/<br>supernumerary rib, full or extra           | 9                   | 0         | 11         | 0       | 0                           | 0         | 0          | 0       |
| Thoracolumbar, Short/<br>rudimentary | 14th rib/ Lumbar rib/<br>supernumerary rib, short or<br>rudimentary | 37                  | 18        | 19         | 0       | 23                          | 19        | 4          | 0       |
|                                      | Total                                                               | 46                  |           |            |         | 343                         |           |            |         |

Straian: Wistar Hannover

| Findings<br>(A,abnormality; V, variation) |   |   |                               | Terms used in the laboratory/<br>Related term | RccHanTM:WIST Lab=4                                     |         |         |         |                                       |                                                          | BrHan:WIST@Jcl(GALAS) Lab=3        |        |         |         |                                       |                                                          |
|-------------------------------------------|---|---|-------------------------------|-----------------------------------------------|---------------------------------------------------------|---------|---------|---------|---------------------------------------|----------------------------------------------------------|------------------------------------|--------|---------|---------|---------------------------------------|----------------------------------------------------------|
|                                           |   |   |                               |                                               | No. fetuses<br>showing<br>finding                       | No.dams | No.exp. | No.Labs | No.fetuses<br>showing<br>findings/dam | No. dams<br>having<br>abnormal<br>fetuses/<br>experiment | No. of fetus<br>showing<br>finding | No.dam | No.exp. | No.Labs | No.fetuses<br>showing<br>findings/dam | No. dams<br>having<br>abnormal<br>fetuses/<br>experiment |
| Skull                                     |   |   |                               |                                               |                                                         |         |         |         |                                       |                                                          |                                    |        |         |         |                                       |                                                          |
|                                           |   | A | Exoccipital and cervical arch | Fused                                         | 0                                                       |         |         |         |                                       | 0                                                        |                                    |        |         |         |                                       |                                                          |
|                                           | V |   | Frontal                       | Incomplete ossification                       | 0                                                       |         |         |         |                                       | 0                                                        |                                    |        |         |         |                                       |                                                          |
|                                           | V |   | Hyoid                         | Unossified                                    | Incomplete ossification                                 | 0       |         |         |                                       | 0                                                        |                                    |        |         |         |                                       |                                                          |
|                                           |   |   |                               | Incomplete ossification                       |                                                         | 0       |         |         |                                       | 0                                                        |                                    |        |         |         |                                       |                                                          |
|                                           | V |   | Interparietal                 | Incomplete ossification                       |                                                         | 3       | 3       | 3       | 3                                     | 1                                                        | 1                                  | 0      |         |         |                                       |                                                          |
|                                           | V |   | Nasal                         | Incomplete ossification                       |                                                         | 0       | 0       | 0       | 0                                     | 0                                                        | 0                                  | 3      | 3       | 1       | 1                                     |                                                          |
|                                           | V |   | Parietal                      | Incomplete ossification                       |                                                         | 5       | 2       | 1       | 1                                     | 1                                                        | 1                                  | 6      | 6       | 6       | 1                                     |                                                          |
|                                           | V |   | Supraoccipital                | Incomplete ossification                       |                                                         | 1       | 1       | 1       | 1                                     | 1                                                        | 1                                  | 0      |         |         |                                       |                                                          |
|                                           | V |   | Zygomatic                     | Fused with maxilla                            | Zygomatic bone fused with maxilla                       | 0       | 0       | 0       | 0                                     | 0                                                        | 0                                  | 14     | 11      | 4       | 1                                     |                                                          |
|                                           |   |   |                               |                                               |                                                         |         |         |         |                                       |                                                          |                                    |        |         |         |                                       |                                                          |
| Scapula                                   |   |   |                               |                                               |                                                         |         |         |         |                                       |                                                          |                                    |        |         |         |                                       |                                                          |
|                                           |   | A | Scapula                       | Misshapen                                     | 0                                                       |         |         |         |                                       | 0                                                        |                                    |        |         |         |                                       |                                                          |
|                                           | V |   | Scapula                       | Bent                                          | 0                                                       | 0       | 0       | 0       | 0                                     | 0                                                        | 2                                  | 1      | 1       | 1       | 2                                     |                                                          |
| Cervial vertebrae                         |   |   |                               |                                               |                                                         |         |         |         |                                       |                                                          |                                    |        |         |         |                                       |                                                          |
|                                           |   | A | Arch                          | Fused                                         |                                                         | 0       | 0       | 0       | 0                                     | 0                                                        | 1                                  | 1      | 1       | 1       | 1                                     |                                                          |
|                                           |   | A | Arch cartilage                | Split                                         | Split cartilage of ventral arch                         | 0       | 0       | 0       | 0                                     | 0                                                        | 1                                  | 1      | 1       | 1       | 1                                     |                                                          |
|                                           |   | A | Centrum                       | Fused                                         | Fusion between occipital and the first cervical centrum | 0       | 0       | 0       | 0                                     | 0                                                        | 1                                  | 1      | 1       | 1       | 1                                     |                                                          |
|                                           |   | A |                               | Split                                         |                                                         | 0       | 0       | 0       | 0                                     | 0                                                        | 1                                  | 1      | 1       | 1       | 1                                     |                                                          |
|                                           |   | A | Centrum cartilage             | Fused                                         | Fused cervical centrum cartilage                        | 0       | 0       | 0       | 0                                     | 0                                                        | 2                                  |        |         |         |                                       |                                                          |
|                                           |   | A |                               | Split                                         | Split cartilage of cervical centrum                     | 0       | 0       | 0       | 0                                     | 0                                                        | 1                                  | 1      | 1       | 1       | 1                                     |                                                          |
|                                           |   | A | Vertebra                      | Hemivertebra                                  | Cervical hemivertebra                                   | 0       | 0       | 0       | 0                                     | 0                                                        | 1                                  | 1      | 1       | 1       | 1                                     |                                                          |
| Thoracic vertebrae                        |   |   |                               |                                               |                                                         |         |         |         |                                       |                                                          |                                    |        |         |         |                                       |                                                          |
|                                           |   | A | Centrum cartilage             | Split                                         | Split cartilage of thoracic centrum                     | 0       | 0       | 0       | 0                                     | 0                                                        | 1                                  | 1      | 1       | 1       | 1                                     |                                                          |
|                                           | V |   | Centrum                       | Split                                         | Bipartite ossification                                  | 2       | 2       | 1       | 1                                     | 1                                                        | 1-2                                | 0      |         |         |                                       |                                                          |
|                                           | V |   |                               | Dumbbell ossification                         |                                                         | 0       | 0       | 0       | 0                                     | 0                                                        | 0                                  | 1      | 1       | 1       | 1                                     |                                                          |
|                                           | V |   |                               | Unossified                                    |                                                         | 0       |         |         |                                       |                                                          | 0                                  |        |         |         |                                       |                                                          |

| Findings<br>(A,abnormality; V, variation) |   |                                      |                         | Terms used in the laboratory/<br>Related term                                                                                                   | RccHanTM:WIST Lab=4               |         |         |         |                                       |                                                          | BrHan:WIST@Jcl(GALAS) Lab=3        |        |         |         |                                       |                                                          |
|-------------------------------------------|---|--------------------------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|---------|---------|---------|---------------------------------------|----------------------------------------------------------|------------------------------------|--------|---------|---------|---------------------------------------|----------------------------------------------------------|
|                                           |   |                                      |                         |                                                                                                                                                 | No. fetuses<br>showing<br>finding | No.dams | No.exp. | No.Labs | No.fetuses<br>showing<br>findings/dam | No. dams<br>having<br>abnormal<br>fetuses/<br>experiment | No. of fetus<br>showing<br>finding | No.dam | No.exp. | No.Labs | No.fetuses<br>showing<br>findings/dam | No. dams<br>having<br>abnormal<br>fetuses/<br>experiment |
| Lumbar vertebrae                          |   |                                      |                         |                                                                                                                                                 |                                   |         |         |         |                                       |                                                          |                                    |        |         |         |                                       |                                                          |
|                                           | A | Vertebra                             | Supernumerary           |                                                                                                                                                 | 7                                 | 6       | 3       | 1       | 2                                     | 3                                                        | 0                                  |        |         |         |                                       |                                                          |
|                                           | V | Lumbosacral<br>transitional vertebra |                         |                                                                                                                                                 | 1                                 | 1       | 1       | 1       | 1                                     | 1                                                        | 51                                 | 39     | 5       | 1       | 1-3                                   | 6-10                                                     |
| Sacral vertebrae                          |   |                                      |                         |                                                                                                                                                 |                                   |         |         |         |                                       |                                                          |                                    |        |         |         |                                       |                                                          |
|                                           | V | Lumbarization                        |                         |                                                                                                                                                 | 1                                 | 1       | 1       | 1       | 1                                     | 1                                                        | 8                                  | 7      | 1       | 1       | 1-2                                   | 7                                                        |
| Vertebrae                                 |   |                                      |                         |                                                                                                                                                 |                                   |         |         |         |                                       |                                                          |                                    |        |         |         |                                       |                                                          |
|                                           | V | Presacral vertebrae                  | Increased               | 27 presacral vertebrae/ 7 lumbar<br>vertebrae/ Supernumerary lumbar<br>vertebra/ Supernumerary presacral<br>vertebra/ Increased lumbar vertebra | 3                                 | 3       | 1       | 1       | 1                                     | 1                                                        | 104                                | 69     | 17      | 3       | 1-6                                   | 1-10                                                     |
| Ribs                                      |   |                                      |                         |                                                                                                                                                 |                                   |         |         |         |                                       |                                                          |                                    |        |         |         |                                       |                                                          |
|                                           | A | Costal cartilage                     | Absent (partial)        | Rib cartilage not fused to sternum<br>(1st/2nd)                                                                                                 | 0                                 |         |         |         |                                       |                                                          | 5                                  | 5      | 3       | 1       | 1                                     | 1-3                                                      |
|                                           | A |                                      | Fused                   | Fused rib cartilage                                                                                                                             | 0                                 |         |         |         |                                       |                                                          | 0                                  |        |         |         |                                       |                                                          |
|                                           | A | Rib                                  | Short                   | Branched rib cartilage (false rib)                                                                                                              | 0                                 |         |         |         |                                       |                                                          | 1                                  | 1      | 1       | 1       | 1                                     | 1                                                        |
|                                           | V | Rib                                  | Branched                | Discontinuous rib cartilage (false<br>rib)                                                                                                      | 0                                 |         |         |         |                                       |                                                          | 6                                  | 5      | 3       | 1       | 2                                     | 1-4                                                      |
|                                           | V |                                      | Discontinuous           |                                                                                                                                                 | 0                                 |         |         |         |                                       |                                                          | 184                                | 84     | 6       | 1       | 1-5                                   | 13-19                                                    |
|                                           | V |                                      | Short (13th rib)        |                                                                                                                                                 | 0                                 |         |         |         |                                       |                                                          | 0                                  |        |         |         |                                       |                                                          |
|                                           | V |                                      | Wavy                    |                                                                                                                                                 | 2                                 | 2       | 2       | 2       | 1                                     | 1                                                        | 7                                  | 4      | 5       | 2       | 1-3                                   | 1-3                                                      |
|                                           | V | Supernumerary rib                    | Cervical                | Cervical rib                                                                                                                                    | 0                                 |         |         |         |                                       |                                                          | 10                                 | 7      | 7       | 2       | 1-2                                   | 1-3                                                      |
| Sternebrae                                |   |                                      |                         |                                                                                                                                                 |                                   |         |         |         |                                       |                                                          |                                    |        |         |         |                                       |                                                          |
|                                           | A | Sternebrae                           | Fused                   |                                                                                                                                                 | 1                                 | 1       | 1       | 1       | 1                                     | 1                                                        | 1                                  | 1      | 1       | 1       | 1                                     | 1                                                        |
|                                           | A | Sternoschisis                        |                         |                                                                                                                                                 | 0                                 |         |         |         |                                       |                                                          | 1                                  | 1      | 1       | 1       | 1                                     | 1                                                        |
|                                           | V | Sternebra                            | Asymmetric              | Asymmetric ossification                                                                                                                         | 4                                 | 4       | 3       | 2       | 1                                     | 2                                                        | 7                                  | 8      | 6       | 2       | 1-2                                   | 1-2                                                      |
|                                           | V |                                      | Bipartite/Split         | Sternebra, Bipartite ossification/<br>Bipartite ossification of sternebra                                                                       | 2                                 | 1       | 1       | 1       | 1                                     | 1                                                        | 5                                  | 4      | 4       | 2       | 1-2                                   | 1-2                                                      |
|                                           | V |                                      | Incomplete ossification |                                                                                                                                                 | 25                                | 12      | 3       | 2       | 1-4                                   | 1-19                                                     | 0                                  |        |         |         |                                       |                                                          |
|                                           | V |                                      | Misaligned              |                                                                                                                                                 | 0                                 |         |         |         |                                       |                                                          | 3                                  | 3      | 2       | 1       | 1-2                                   | 1-2                                                      |
|                                           | V |                                      | Unossified              |                                                                                                                                                 | 1                                 | 1       | 1       | 1       | 1                                     | 1                                                        | 1                                  | 1      | 1       | 1       | 1                                     | 1                                                        |
| Clavicle/Forelimb/Hindlimb                |   |                                      |                         |                                                                                                                                                 |                                   |         |         |         |                                       |                                                          |                                    |        |         |         |                                       |                                                          |
|                                           | A | Clavicle                             | Bent                    |                                                                                                                                                 | 0                                 |         |         |         |                                       |                                                          | 0                                  |        |         |         |                                       |                                                          |
|                                           | A | Phalanx                              | Fused                   |                                                                                                                                                 | 0                                 |         |         |         |                                       |                                                          | 1                                  | 1      | 1       | 1       | 1                                     | 1                                                        |
|                                           | V | Metacarpal                           | Incomplete ossification |                                                                                                                                                 | 5                                 | 4       | 2       | 1       | 1-2                                   | 1-4                                                      | 0                                  |        |         |         |                                       |                                                          |