**ANNEXURE 5 F: Adult Fish Testis Histology Assessment Data** (Assessment sheet adapted from Bernet et al., 1999 by Van Dyk, JC & Marchand, MJ 2006)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Testis Quantitative Histological Assessment** | | |  | | | | | | | | | | | | |
| **Assessor:** UMC NIBAMUREKE | | |
| **Species:** | *O. mossambicus* (adult) | |
| **Site:** | Laboratory Exposure study 2016 - 2018 | |
|  |  |  | **Specimen no:** |  | **1** |  | **2** | | | **5** | | | **6** | | |
| **RP** | **Functional Unit** | **Alterations** |  | **Score** | **IF** | **Index** | **Score** | **IF** | **Index** | **Score** | **IF** | **Index** | **Score** | **IF** | **Index** |
| **CD** |  | Aneurysm/Haemorrhage | e.g. induce congestion | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Intercellular oedema |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
| **Irp INDEX** | | | |  |  | **0** |  |  | **0** |  |  | **0** |  |  | **0** |
| **RC** | Lobule cysts | Disorganization of lobules |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Detachment of basal membrane |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Inhibition of spermatogenesis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  |  | Degeneration of Sertoli cells |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | Interstitial tissue | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alteration | in leydig cells | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Deposits | MMC | **0** | **1** | **0** | **0** | **1** | **0** | **2** | **1** | **2** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **2** | **1** | **2** | **2** | **1** | **2** | **2** | **1** | **2** | **2** | **1** | **2** |
|  |  | Nuclear alterations | in leydig cells | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  | **Developmental stages** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | (1) Spermatogonia | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **2** | **1** | **2** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Inter cellular deposits |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  | (2) Spermatocytes | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **2** | **1** | **2** | **4** | **1** | **4** | **2** | **1** | **2** | **2** | **1** | **2** |
|  |  | Inter cellular deposits |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  | (3) Spermatids | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **0** | **1** | **0** | **2** | **1** | **2** | **2** | **1** | **2** | **2** | **1** | **2** |
|  |  | Inter celllular deposits |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  | (4) Spermatozoa | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Inter celllular deposits |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
| **Irp INDEX** | | | |  |  | **6** |  |  | **8** |  |  | **8** |  |  | **6** |
| **PC** | Lobule cysts | Wall proliferation | e.g. basal membrane / Tunica A | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Wall proliferation | e.g. blood vessels | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  | Interstitial tissue | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | **Developmental stages** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | (1) Spermatogonia | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | (2) Spermatocytes | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | (3) Spermatids | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | (4) Spermatozoa | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
| **Irp INDEX** | | | | **0** | | | **0** | | | **0** | | | **0** | | |
| **I** |  | Exudate |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Activation of RES |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Infiltration | Leucocytes (MNL) | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
| **Irp INDEX** | | | |  |  | **0** |  |  | **0** |  |  | **0** |  |  | **0** |
| **T** |  | Benign |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Malignant |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
| **Irp INDEX** | | | |  |  | **0** |  |  | **0** |  |  | **0** |  |  | **0** |
| **IS** |  | Intersex |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** | **2** | **3** | **6** |
| **Irp INDEX** | | | |  |  | **0** |  |  | **0** |  |  | **0** |  |  | **6** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | **Iorg INDEX:** |  |  | **6** |  |  | **8** |  |  | **8** |  |  | **12** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Testis Quantitative Histological Assessment** | | |  | | | | | | | | | | | | | |
| **Assessor:** UMC NIBAMUREKE | | |
| **Species:** | *O. mossambicus* (adult) | |
| **Site:** | Laboratory Exposure study 2016 - 2018 | |
| **Specimen no:** | | | | **7** | | | **9** | | | **11** | | | **13** | | |
| **RP** | **Functional Unit** | **Alterations** |  | **Score** | **IF** | **Index** | **Score** | **IF** | **Index** | **Score** | **IF** | **Index** | **Score** | **IF** | **Index** |
| **CD** |  | Aneurysm/Haemorrhage | e.g. induce congestion | **0** | **1** | **0** | **0** | **1** | **0** | **2** | **1** | **2** | **2** | **1** | **2** |
|  |  | Intercellular oedema |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
| **Irp INDEX** | | | |  |  | **0** |  |  | **0** |  |  | **2** |  |  | **2** |
| **RC** | Lobule cysts | Disorganization of lobules |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Detachment of basal membrane |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Inhibition of spermatogenesis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  |  | Degeneration of Sertoli cells |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | Interstitial tissue | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alteration | in leydig cells | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Deposits | MMC | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **0** | **1** | **0** | **0** | **1** | **0** | **2** | **1** | **2** | **2** | **1** | **2** |
|  |  | Nuclear alterations | in leydig cells | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  | **Developmental stages** |  |  | **0** |  |  |  |  |  |  |  |  |  |  |  |
|  | (1) Spermatogonia | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Inter cellular deposits |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  | (2) Spermatocytes | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **0** | **1** | **0** | **0** | **1** | **0** | **2** | **1** | **2** | **2** | **1** | **2** |
|  |  | Inter cellular deposits |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  | (3) Spermatids | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **2** | **1** | **2** | **2** | **1** | **2** | **4** | **1** | **4** | **2** | **1** | **2** |
|  |  | Inter celllular deposits |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  | (4) Spermatozoa | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Inter celllular deposits |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
| **Irp INDEX** | | | |  |  | **2** |  |  | **2** |  |  | **8** |  |  | **6** |
| **PC** | Lobule cysts | Wall proliferation | e.g. basal membrane / Tunica A | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Wall proliferation | e.g. blood vessels | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  | Interstitial tissue | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | **Developmental stages** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | (1) Spermatogonia | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | (2) Spermatocytes | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | (3) Spermatids | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | (4) Spermatozoa | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
| **Irp INDEX** | | | | **0** | | | **0** | | | **0** | | | **0** | | |
| **I** |  | Exudate |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Activation of RES |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Infiltration | Leucocytes (MNL) | **0** | **2** | **0** |  | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
| **Irp INDEX** | | | |  |  | **0** |  |  | **0** |  |  | **0** |  |  | **0** |
| **T** |  | Benign |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Malignant |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
| **Irp INDEX** | | | |  |  | **0** |  |  | **0** |  |  | **0** |  |  | **0** |
| **IS** |  | Intersex |  | **2** | **3** | **6** | **0** | **3** | **0** | **2** | **3** | **6** | **0** | **3** | **0** |
| **Irp INDEX** | | | |  |  | **6** |  |  | **0** |  |  | **6** |  |  | **0** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | **Iorg INDEX:** |  |  | **8** |  |  | **2** |  |  | **16** |  |  | **8** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Testis Quantitative Histological Assessment** | | |  | | | | | | | | | |
| **Assessor:** UMC NIBAMUREKE | | |
| **Species:** | *O. mossambicus* (adult) | |
| **Site:** | Laboratory Exposure study 2016 - 2018 | |
| **Specimen no:** | | | | **15** | | | **19** | | | **20** | | |
| **RP** | **Functional Unit** | **Alterations** |  | **Score** | **IF** | **Index** | **Score** | **IF** | **Index** | **Score** | **IF** | **Index** |
| **CD** |  | Aneurysm/Haemorrhage | e.g. induce congestion | **0** | **1** | **0** | **2** | **1** | **2** | **2** | **1** | **2** |
|  |  | Intercellular oedema |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
| **Irp INDEX** | | | |  |  | **0** |  |  | **2** |  |  | **2** |
| **RC** | Lobule cysts | Disorganization of lobules |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Detachment of basal membrane |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Inhibition of spermatogenesis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  |  | Degeneration of Sertoli cells |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | Interstitial tissue | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alteration | in leydig cells | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Deposits | MMC | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **2** | **1** | **2** | **0** | **1** | **0** | **2** | **1** | **2** |
|  |  | Nuclear alterations | in leydig cells | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  | **Developmental stages** |  |  |  |  |  |  |  |  |  |  |  |
|  | (1) Spermatogonia | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Inter cellular deposits |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  | (2) Spermatocytes | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **2** | **1** | **2** | **2** | **1** | **2** | **2** | **1** | **2** |
|  |  | Inter cellular deposits |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  | (3) Spermatids | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **2** | **1** | **2** | **2** | **1** | **2** | **2** | **1** | **2** |
|  |  | Inter celllular deposits |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  | (4) Spermatozoa | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Inter celllular deposits |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
| **Irp INDEX** | | | |  |  | **6** |  |  | **4** |  |  | **6** |
| **PC** | Lobule cysts | Wall proliferation | e.g. basal membrane / Tunica A | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Wall proliferation | e.g. blood vessels | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  | Interstitial tissue | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | **Developmental stages** |  |  |  |  |  |  |  |  |  |  |  |
|  | (1) Spermatogonia | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | (2) Spermatocytes | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | (3) Spermatids | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | (4) Spermatozoa | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
| **Irp INDEX** | | | | **0** | | | **0** | | | **0** | | |
| **I** |  | Exudate |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Activation of RES |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Infiltration | Leucocytes (MNL) | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
| **Irp INDEX** | | | |  |  | **0** |  |  | **0** |  |  | **0** |
| **T** |  | Benign |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Malignant |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
| **Irp INDEX** | | | |  |  | **0** |  |  | **0** |  |  | **0** |
| **IS** |  | Intersex |  | **0** | **3** | **0** | **0** | **3** | **0** | **2** | **3** | **6** |
| **Irp INDEX** | | | |  |  | **0** |  |  | **0** |  |  | **6** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | **Iorg INDEX:** |  |  | **6** |  |  | **6** |  |  | **14** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Testis Quantitative Histological Assessment** | | |  | | | | | | | | | | |
| **Assessor:** UMC NIBAMUREKE | | |
| **Species:** | *O. mossambicus* (adult) | |
| **Site:** | Laboratory Exposure study 2016 - 2018 | |
| **Specimen no:** | | | | **21** | | | **24** | | | **25** | | | |
| **RP** | **Functional Unit** | **Alterations** |  | **Score** | **IF** | **Index** | **Score** | **IF** | **Index** | **Score** | **IF** | **Index** |
| **CD** |  | Aneurysm/Haemorrhage | e.g. induce congestion | **2** | **1** | **2** | **2** | **1** | **2** | **2** | **1** | **2** |
|  |  | Intercellular oedema |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
| **Irp INDEX** | | | |  |  | **2** |  |  | **2** |  |  | **2** |
| **RC** | Lobule cysts | Disorganization of lobules |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Detachment of basal membrane |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Inhibition of spermatogenesis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  |  | Degeneration of Sertoli cells |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | Interstitial tissue | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alteration | in leydig cells | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Deposits | MMC | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **2** | **1** | **2** | **2** | **1** | **2** | **2** | **1** | **2** |
|  |  | Nuclear alterations | in leydig cells | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  | **Developmental stages** |  |  |  |  |  |  |  |  | **0** |  |  |
|  | (1) Spermatogonia | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Inter cellular deposits |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  | (2) Spermatocytes | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **0** | **1** | **0** | **2** | **1** | **2** | **0** | **1** | **0** |
|  |  | Inter cellular deposits |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  | (3) Spermatids | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **2** | **1** | **2** | **2** | **1** | **2** | **2** | **1** | **2** |
|  |  | Inter celllular deposits |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  | (4) Spermatozoa | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Inter celllular deposits |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
| **Irp INDEX** | | | |  |  | **4** |  |  | **6** |  |  | **4** |
| **PC** | Lobule cysts | Wall proliferation | e.g. basal membrane / Tunica A | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Wall proliferation | e.g. blood vessels | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  | Interstitial tissue | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | **Developmental stages** |  |  |  |  |  |  |  |  |  |  |  |
|  | (1) Spermatogonia | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | (2) Spermatocytes | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | (3) Spermatids | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | (4) Spermatozoa | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
| **Irp INDEX** | | | | **0** | | | **0** | | | **0** | | | |
| **I** |  | Exudate |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Activation of RES |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Infiltration | Leucocytes (MNL) | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
| **Irp INDEX** | | | |  |  | **0** |  |  | **0** |  |  | **0** |
| **T** |  | Benign |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Malignant |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
| **Irp INDEX** | | | |  |  | **0** |  |  | **0** |  |  | **0** |
| **IS** |  | Intersex |  | **2** | **3** | **6** | **0** | **3** | **0** | **2** | **3** | **6** |
| **Irp INDEX** | | | |  |  | **6** |  |  | **0** |  |  | **6** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | **Iorg INDEX:** |  |  | **12** |  |  | **8** |  |  | **12** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Testis Quantitative Histological Assessment** | | |  | | | | | | | | | |
| **Assessor:** UMC NIBAMUREKE | | |
| **Species:** | *O. mossambicus* (adult) | |
| **Site:** | Laboratory Exposure study 2016 - 2018 | |
|  |  |  | **Specimen no:** |  | **29** |  | **31** | | | **35** | | |
| **RP** | **Functional Unit** | **Alterations** |  | **Score** | **IF** | **Index** | **Score** | **IF** | **Index** | **Score** | **IF** | **Index** |
| **CD** |  | Aneurysm/Haemorrhage | e.g. induce congestion | **4** | **1** | **4** | **0** | **1** | **0** | **2** | **1** | **2** |
|  |  | Intercellular oedema |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
| **Irp INDEX** | | | |  |  | **4** |  |  | **0** |  |  | **2** |
| **RC** | Lobule cysts | Disorganization of lobules |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Detachment of basal membrane |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Inhibition of spermatogenesis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  |  | Degeneration of Sertoli cells |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | Interstitial tissue | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alteration | in leydig cells | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Deposits | MMC | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **2** | **1** | **2** | **0** | **1** | **0** | **2** | **1** | **2** |
|  |  | Nuclear alterations | in leydig cells | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  | **Developmental stages** |  |  |  |  |  |  |  |  |  |  |  |
|  | (1) Spermatogonia | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Inter cellular deposits |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  | (2) Spermatocytes | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **2** | **1** | **2** | **2** | **1** | **2** | **2** | **1** | **2** |
|  |  | Inter cellular deposits |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** | **0** | **2** | **0** | **2** | **2** | **4** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  | (3) Spermatids | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **2** | **1** | **2** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Inter celllular deposits |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  | (4) Spermatozoa | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Inter celllular deposits |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
| **Irp INDEX** | | | |  |  | **6** |  |  | **2** |  |  | **8** |
| **PC** | Lobule cysts | Wall proliferation | e.g. basal membrane / Tunica A | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Wall proliferation | e.g. blood vessels | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  | Interstitial tissue | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | **Developmental stages** |  |  |  |  |  |  |  |  |  |  |  |
|  | (1) Spermatogonia | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | (2) Spermatocytes | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | (3) Spermatids | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | (4) Spermatozoa | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
| **Irp INDEX** | | | | **0** | | | **0** | | | **0** | | |
| **I** |  | Exudate |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Activation of RES |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Infiltration | Leucocytes (MNL) | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
| **Irp INDEX** | | | |  |  | **0** |  |  | **0** |  |  | **0** |
| **T** |  | Benign |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Malignant |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
| **Irp INDEX** | | | |  |  | **0** |  |  | **0** |  |  | **0** |
| **IS** |  | Intersex |  | **2** | **3** | **6** | **0** | **3** | **0** | **2** | **3** | **6** |
| **Irp INDEX** | | | |  |  | **6** |  |  | **0** |  |  | **6** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | **Iorg INDEX:** |  |  | **16** |  |  | **2** |  |  | **16** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Testis Quantitative Histological Assessment** | | |  | | | | | | | | | | |
| **Assessor:** UMC NIBAMUREKE | | |
| **Species:** | *O. mossambicus* (adult) | |
| **Site:** | Laboratory Exposure study 2016 - 2018 | |
| **Specimen no:** | | | | **37** | | | **40** | | | **41** | | | |
| **RP** | **Functional Unit** | **Alterations** |  | **Score** | **IF** | **Index** | **Score** | **IF** | **Index** | **Score** | **IF** | **Index** |
| **CD** |  | Aneurysm/Haemorrhage | e.g. induce congestion | **2** | **1** | **2** | **0** | **1** | **0** | **2** | **1** | **2** |
|  |  | Intercellular oedema |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
| **Irp INDEX** | | | |  |  | **2** |  |  | **0** |  |  | **2** |
| **RC** | Lobule cysts | Disorganization of lobules |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Detachment of basal membrane |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Inhibition of spermatogenesis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  |  | Degeneration of Sertoli cells |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | Interstitial tissue | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alteration | in leydig cells | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Deposits | MMC | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **2** | **1** | **2** | **2** | **1** | **2** | **2** | **1** | **2** |
|  |  | Nuclear alterations | in leydig cells | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  | **Developmental stages** |  |  |  |  |  |  |  |  |  |  |  |
|  | (1) Spermatogonia | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Inter cellular deposits |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  | (2) Spermatocytes | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **2** | **1** | **2** | **2** | **1** | **2** | **0** | **1** | **0** |
|  |  | Inter cellular deposits |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **2** | **2** | **4** | **2** | **2** | **4** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  | (3) Spermatids | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **2** | **1** | **2** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Inter celllular deposits |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  | (4) Spermatozoa | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Inter celllular deposits |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
| **Irp INDEX** | | | |  |  | **10** |  |  | **8** |  |  | **2** |
| **PC** | Lobule cysts | Wall proliferation | e.g. basal membrane / Tunica A | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Wall proliferation | e.g. blood vessels | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  | Interstitial tissue | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | **Developmental stages** |  |  |  |  |  |  |  |  |  |  |  |
|  | (1) Spermatogonia | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | (2) Spermatocytes | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | (3) Spermatids | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | (4) Spermatozoa | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
| **Irp INDEX** | | | | **0** | | | **0** | | | **0** | | | |
| **I** |  | Exudate |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Activation of RES |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Infiltration | Leucocytes (MNL) | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
| **Irp INDEX** | | | |  |  | **0** |  |  | **0** |  |  | **0** |
| **T** |  | Benign |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Malignant |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
| **Irp INDEX** | | | |  |  | **0** |  |  | **0** |  |  | **0** |
| **IS** |  | Intersex |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
| **Irp INDEX** | | | |  |  | **0** |  |  | **0** |  |  | **0** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | **Iorg INDEX:** |  |  | **12** |  |  | **8** |  |  | **4** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Testis Quantitative Histological Assessment** | | |  | | | | | | | | | |
| **Assessor:** UMC NIBAMUREKE | | |
| **Species:** | *O. mossambicus* (adult) | |
| **Site:** | Laboratory Exposure study 2016 - 2018 | |
| **Specimen no:** | | | | **42** | | | **43** | | | **46** | | |
| **RP** | **Functional Unit** | **Alterations** |  | **Score** | **IF** | **Index** | **Score** | **IF** | **Index** | **Score** | **IF** | **Index** |
| **CD** |  | Aneurysm/Haemorrhage | e.g. induce congestion | **4** | **1** | **4** | **0** | **1** | **0** | **2** | **1** | **2** |
|  |  | Intercellular oedema |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
| **Irp INDEX** | | | |  |  | **4** |  |  | **0** |  |  | **2** |
| **RC** | Lobule cysts | Disorganization of lobules |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Detachment of basal membrane |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Inhibition of spermatogenesis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  |  | Degeneration of Sertoli cells |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | Interstitial tissue | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alteration | in leydig cells | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Deposits | MMC | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **2** | **1** | **2** | **2** | **1** | **2** | **2** | **1** | **2** |
|  |  | Nuclear alterations | in leydig cells | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  | **Developmental stages** |  |  |  |  |  |  |  |  |  |  |  |
|  | (1) Spermatogonia | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Inter cellular deposits |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  | (2) Spermatocytes | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **0** | **1** | **0** | **2** | **1** | **2** | **2** | **1** | **2** |
|  |  | Inter cellular deposits |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** | **2** | **2** | **4** | **2** | **2** | **4** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  | (3) Spermatids | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **0** | **1** | **0** | **2** | **1** | **2** | **2** | **1** | **2** |
|  |  | Inter celllular deposits |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
|  | (4) Spermatozoa | Structural alterations |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Vacuolation |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Inter celllular deposits |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
| **Irp INDEX** | | | |  |  | **2** |  |  | **10** |  |  | **10** |
| **PC** | Lobule cysts | Wall proliferation | e.g. basal membrane / Tunica A | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Wall proliferation | e.g. blood vessels | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  | Interstitial tissue | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | **Developmental stages** |  |  |  |  |  |  |  |  |  |  |  |
|  | (1) Spermatogonia | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | (2) Spermatocytes | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | (3) Spermatids | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  | (4) Spermatozoa | Hypertrophy |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
| **Irp INDEX** | | | | **0** | | | **0** | | | **0** | | |
| **I** |  | Exudate |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Activation of RES |  | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** |
|  |  | Infiltration | Leucocytes (MNL) | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
| **Irp INDEX** | | | |  |  | **0** |  |  | **0** |  |  | **0** |
| **T** |  | Benign |  | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
|  |  | Malignant |  | **0** | **3** | **0** | **0** | **3** | **0** | **0** | **3** | **0** |
| **Irp INDEX** | | | |  |  | **0** |  |  | **0** |  |  | **0** |
| **IS** |  | Intersex |  | **0** | **3** | **0** | **2** | **3** | **6** | **2** | **3** | **6** |
| **Irp INDEX** | | | |  |  | **0** |  |  | **6** |  |  | **6** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | **Iorg INDEX:** |  |  | **6** |  |  | **16** |  |  | **18** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Testis Quantitative Histological Assessment** | | |  | | | |
| **Assessor:** UMC NIBAMUREKE | | |
| **Species:** | *O. mossambicus* (adult) | |
| **Site:** | Laboratory Exposure study 2016 - 2018 | |
| **Specimen no:** | | | | **48** | | |
| **RP** | **Functional Unit** | **Alterations** |  | **Score** | **IF** | **Index** |
| **CD** |  | Aneurysm/Haemorrhage | e.g. induce congestion | **2** | **1** | **2** |
|  |  | Intercellular oedema |  | **0** | **1** | **0** |
| **Irp INDEX** | | | |  |  | **2** |
| **RC** | Lobule cysts | Disorganization of lobules |  | **0** | **1** | **0** |
|  |  | Detachment of basal membrane |  | **0** | **1** | **0** |
|  |  | Inhibition of spermatogenesis |  | **0** | **3** | **0** |
|  |  | Degeneration of Sertoli cells |  | **0** | **2** | **0** |
|  | Interstitial tissue | Structural alterations |  | **0** | **1** | **0** |
|  |  | Plasma alteration | in leydig cells | **0** | **1** | **0** |
|  |  | Deposits | MMC | **0** | **1** | **0** |
|  |  | Vacuolation |  | **2** | **1** | **2** |
|  |  | Nuclear alterations | in leydig cells | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** |
|  | **Developmental stages** |  |  |  |  |  |
|  | (1) Spermatogonia | Structural alterations |  | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** |
|  |  | Vacuolation |  | **0** | **1** | **0** |
|  |  | Inter cellular deposits |  | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** |
|  | (2) Spermatocytes | Structural alterations |  | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** |
|  |  | Vacuolation |  | **2** | **1** | **2** |
|  |  | Inter cellular deposits |  | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** |
|  | (3) Spermatids | Structural alterations |  | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** |
|  |  | Vacuolation |  | **2** | **1** | **2** |
|  |  | Inter celllular deposits |  | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** |
|  | (4) Spermatozoa | Structural alterations |  | **0** | **1** | **0** |
|  |  | Plasma alterations | e.g. intra cellular deposits | **0** | **1** | **0** |
|  |  | Vacuolation |  | **0** | **1** | **0** |
|  |  | Inter celllular deposits |  | **0** | **1** | **0** |
|  |  | Nuclear alterations |  | **0** | **2** | **0** |
|  |  | Atrophy |  | **0** | **2** | **0** |
|  |  | Necrosis |  | **0** | **3** | **0** |
| **Irp INDEX** | | | |  |  | **6** |
| **PC** | Lobule cysts | Wall proliferation | e.g. basal membrane / Tunica A | **0** | **1** | **0** |
|  |  | Wall proliferation | e.g. blood vessels | **0** | **1** | **0** |
|  | Interstitial tissue | Hypertrophy |  | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** |
|  | **Developmental stages** |  |  |  |  |  |
|  | (1) Spermatogonia | Hypertrophy |  | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** |
|  | (2) Spermatocytes | Hypertrophy |  | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** |
|  | (3) Spermatids | Hypertrophy |  | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** |
|  | (4) Spermatozoa | Hypertrophy |  | **0** | **1** | **0** |
|  |  | Hyperplasia |  | **0** | **2** | **0** |
| **Irp INDEX** | | | |  |  | **0** |
| **I** |  | Exudate |  | **0** | **1** | **0** |
|  |  | Activation of RES |  | **0** | **1** | **0** |
|  |  | Infiltration | Leucocytes (MNL) | **0** | **2** | **0** |
| **Irp INDEX** | | | |  |  | **0** |
| **T** |  | Benign |  | **0** | **2** | **0** |
|  |  | Malignant |  | **0** | **3** | **0** |
| **Irp INDEX** | | | |  |  | **0** |
| **IS** |  | Intersex |  | **0** | **3** | **0** |
| **Irp INDEX** | | | |  |  | **0** |
|  |  |  |  |  |  |  |
|  |  |  | **Iorg INDEX:** |  |  | **8** |