

Pathology Peer Review Process for the 2-Year Study of Cell Phone Radiofrequency Radiation

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NTP Technical Report Peer-Review Meeting
March 26-28, 2018

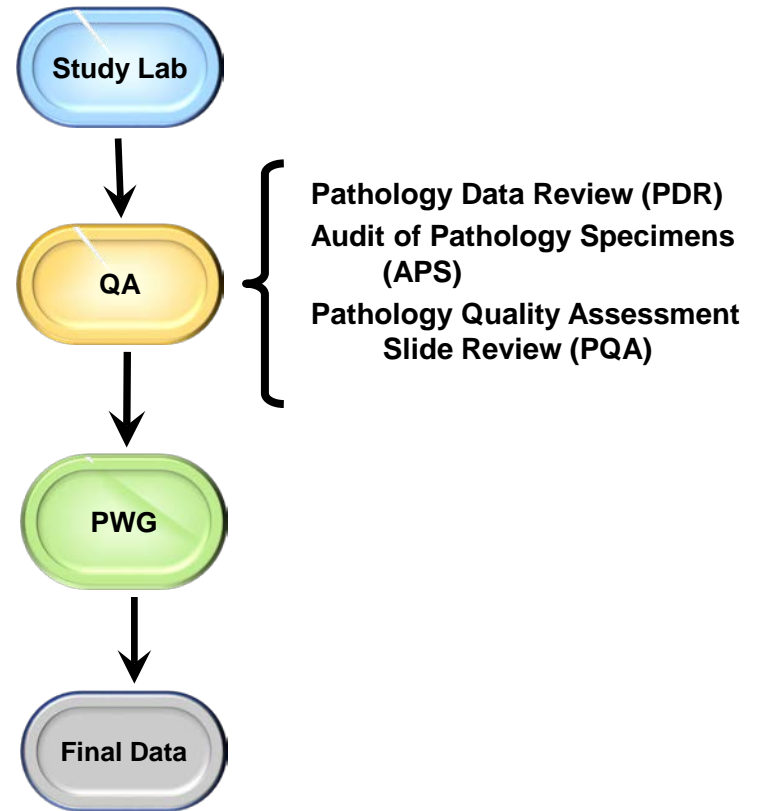




Study Pathologist

Pathology Review Process

- Pathology Data Review
- Audit of Pathology Specimens
- Pathology Quality Assessment Slide Review
- Pathology Working Group
- Final Steps





Supervises necropsy

Performs histopathological evaluation on all tissues

- Usually 50 animals/group (chronic study)

Mouse cell phone RFR study

- 90 animals/group (chronic study)
- 15 animals/group (interim study)
- Two modulations
- Shared control group between the two modulations for each sex

Prepares pathology report



Pathology Data Review (PDR)

Study lab report and all pathology materials and documentation are sent to the NTP archives

Pathology Data Review (PDR) is performed by the Quality Assessment (QA) pathologists

QA pathologists are in communication with the NTP pathologist during the pathology review process



Pathology Data Review (PDR)

QA pathologist reviews

- Study lab report (mouse report for cell phone RFR study)
- Study lab report for companion species (rat report for cell phone RFR study)
- Draft statistical analysis tables
- Draft summary incidence tables
- Historical incidences tables

Draft PDR Report is prepared



Pathology Data Review (PDR)

Draft PDR report includes

- Organs selected for complete review
- Organs selected for review of specific lesions
- Selected lesions for review - terminology



Pathology Data Review (PDR)

PDR meeting is held to finalize decisions about tissues and lesions to review

Mouse cell phone RFR study

- Added a complete review of all tissues from 10% of the control and high-dose animals



Audit of Pathology Specimens (APS)

Residual wet tissue is examined to ensure

- All potential gross lesions were trimmed in
- All organs were properly sampled at necropsy
- Animal identification was correct
- Wet tissue findings matched necropsy records

Slides and blocks are examined to ensure

- Complete and accurate labeling
- Proper sectioning and preparation



Pathology Quality Assessment Slide Review

Conducted by one pathologist

Mouse cell phone RFR study

- Two reviewing pathologists
- One reviewed all the males, one reviewed all the females

Review is read in an open (non-blinded) manner

- Variability in what is normal
- Allows differentiation of subtle lesions, increasing the sensitivity of the study
- Industry standard*

*Neef N, Nikula KJ, Francke-Carroll S, Boone L. Regulatory forum opinion piece: blind reading of histopathology slides in general toxicology studies. *Toxicol Pathol.* 2012 Jun;40(4):697-9. doi: 10.1177/0192623312438737.



Pathology Quality Assessment Slide Review

NTP pathologist resolves most differences of opinion between the study pathologist and the QA pathologist

Mouse cell phone RFR study – 2 QA pathologists

QA pathologist prepares QA report

NTP pathologist and QA pathologist decide which slides to take to the Pathology Working Group (PWG)



Pathology Working Group (PWG)

The PWG carries out a blinded review of:

- Examples of potentially treatment-related lesions
- Lesions where the incidences differed between the study pathologist and the quality assessment pathologist
- Lesions in which there was a difference of opinion between the study pathologist, the quality assessment pathologist and the NTP pathologist

Images are shown for lesions with terminology changes only

Mouse cell phone RFR study

- Two days – one day for females and one day for males



Final Steps

Pathology data is updated

Independent audit is performed on updated data

Final statistical and incidence tables are produced

**Slides and blocks are available for review in the
NTP Archives**



Pathology review process

Questions?