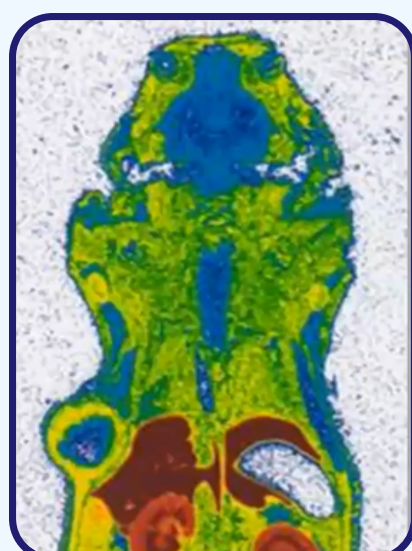


Autoradiography Techniques Within Non-Clinical ADME

QWBA | REAL-TIME IMAGING | MARG

Quantitative Whole-Body Autoradiography (QWBA)

- Shows how a drug and its metabolites move through **body tissues** over time (data for around 50 tissues)
- Test compound under development is typically labelled with ^{14}C or ^3H
- Ideal for both small and large molecules
- Suitable for a variety of **administration routes** (e.g. oral, IV, SC, IP and topical)

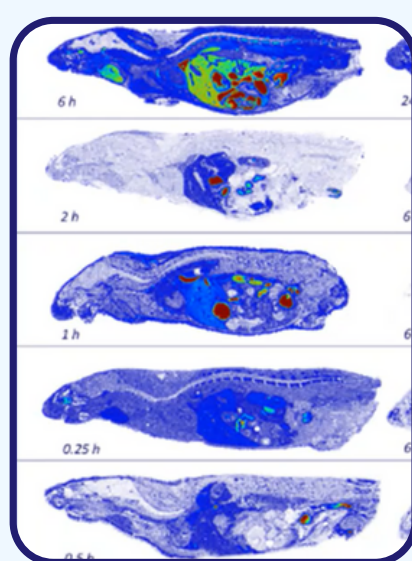


Why QWBA?

- ✓ Quantitative measure of radiolabel **absorption, distribution & elimination**
- ✓ Determination of drug's accumulation to target organs
- ✓ QWBA data complement toxicity findings on drug's accumulation and retention
- ✓ Disease model-based evaluation (e.g. oncology, CNS, CVD)
- ✓ No interference from endogenous material – helps guide more focused analysis
- ✓ Observation of drug-related material localization within tissues
- ✓ Understanding of drug-related material distribution in tissues difficult to analyse
- ✓ Investigation of drug's penetration across **biological barriers** (e.g. BBB)
- ✓ Evidence of melanin binding to determine the **safe radiological dose** for human AME studies
- ✓ 'Direct count' technology enables the **faster, cost-effective** screening & dual-label detection

Direct Count Real-Time Imaging

- Detects radioactivity from drug-related material directly from the source in real-time
- Fast, online measurement – **2-week turnaround time**
- ^3H gives cost-effective labelling options for both small and large molecules

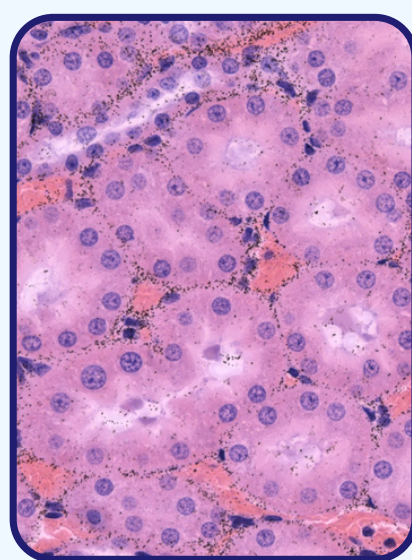


Why Real-Time Imaging?

- ✓ Ideal for comparing a panel of compounds
- ✓ Allows basic quantification in the form of tissue – blood ratios
- ✓ Can assess differences in distribution to key tissues
- ✓ Enables **dual-label imaging** – ^{14}C and ^3H separation in a single image

Micro- Autoradiography (mARG)

- Specialized histology technique that uses nuclear emulsion & light microscopy
- Investigation of unusual distribution, prolonged retention and target cells in **individual tissues**
- Radioactivity viewed as silver grains in the emulsion below the tissue section
- ^3H is preferred as it provides better localization and resolution than ^{14}C
- Suitable for both paraffin wax and fresh frozen preparation techniques



Why mARG?

- ✓ Excellent technique for 'zooming' in on target tissues & areas of accumulation
- ✓ Suitable for better understanding of drugs' **mechanisms of action**
- ✓ Provides evidence that the test material is acting at the intended biological site
- ✓ Ideal for skin penetration studies (*in vivo* or *ex vivo*)
- ✓ Combined with other techniques to confirm targeting (e.g. IHC)
- ✓ When combined with **QWBA** it provides powerful info about targeting and *in vivo* receptor site(s)

Pharmaron's on-demand expert-led webinars are available to help you address key DMPK challenges in drug discovery & development

[DMPK Webinar Series](#)