Dosimetry for Radionuclide Treatment

- Enables individualised treatment planning of molecular radiotherapy
- Suitable for clinical trial use
- A tool to help optimise patient response and minimise side effects
- Development ahead of all competitors
- Aids compliance with the European Directive (Euratom 97/43) for radiotherapeutics and FDA requirements for all new radiopharmaceuticals
- Software can be extended to a wide range of radionuclides

Background
The majority of radiopharmaceutical treatments entail the administration of fixed levels of radioactivity, sometimes corrected for patient mass or more rarely for body surface area. However, the effect of treatment is dependent on the absorbed doses delivered to target volumes and to critical organs. There is now substantial evidence that these vary widely from fixed administrations of activity. Personalised treatment planning, based on individualised patient dosimetry, is likely to significantly improve the effectiveness of the treatment. The need for this kind of software has also been noted by regulatory bodies.

Development
The Radioisotope Physics team at the Institute of Cancer Research (ICR) & the Royal Marsden Hospital (RMH), led by Dr Glenn Flux, have been working in this area for over 20 years in collaboration with Academic Radiotherapy and Nuclear Medicine. The team are recognised world leaders in this area and have developed new methods and techniques for image quantification and dosimetry calculations for clinical studies and company-led clinical trials that have been adopted in centres throughout Europe. Over the last few years they have developed a software package, called qDose, coded by professional software engineers, that uses image-based dosimetry to calculate 3D absorbed dose distributions to provide personalised treatment planning for molecular radiotherapy. qDose runs on windows-based desktop PCs and can be modified for any therapy radionuclide.

Key Publications


Intellectual Property
The software in this project is protected by copyright owned by the ICR. In addition, the ICR has a considerable body of expertise and know-how surrounding molecular radiotherapy, which will enable applications of this technology to be progressed rapidly and effectively.

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Commercial Opportunity
The ICR is currently seeking a licensing partner to take the product to market. The partner would receive exclusive or non-exclusive commercialisation rights to the software depending upon the terms of the agreement. The team are also interested in collaborating to further develop the software.

Figure. Screenshot from qDose, developed as an in-house research tool using the IDL development environment.

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