Proposal summary for a new EC funded project

OCEANuM
Optimization of Children Exposures in Applications of Nuclear Medicine

11 funded partners:

Coordinator: HMGU
Scivis
ULUND
UMIL
JSI
CSIC

Gothenborg (paediatric nuclear diagnostics)
SCK-CEN Belgium
University hospital Brussels (paediatric nuclear diagnostics)
Possible partner from London (paediatric nuclear diagnostics)
New member country partner for radiobiology

Unfunded partners:
UM
Possibly U Ohio

IAEA

Partner project China

Structure:
WP0: Management (HMGU)
WP1: biokinetics / modelling / dose-scaling (UMIL)
WP2: clinical image quality assessment for paediatric nuclear medicine (ULUND)
WP3: Dose-and application-related optimisation of nuclear medical detectors for paediatrics (JSI)
WP4: dose optimisation strategies in paediatric nuclear medicine by means of automated evaluation (Scivis)
WP5: comparative dose evaluation for children undergoing nucl.med.proc. (HMGU)
WP6: radiation protection issues: - staff/care takers, CT contribution , ethical issues (SCK-CEN)
WP7: Dissemination and training (HMGU)

Any suggestions are welcome!!!

Financial estimates:

3 Mio € funding
Approx. 4 -5 Mio € value
11 funded partners
Since, we did not hear anything, here is a first proposal:
Funding:

HMGU	550 k€
ULUND	250 k€
UMIL / HMIL	120 k€ (thanks MC for this great offer!)
JSI	250 k€
CSIC	250 k€
SCIVIS	400 k€
SCK-CEN	220 k€
BrusH	220 k€
GothenburgH	250 k€
LondonH	220 k€ (Sören can you make this contact, pls)
Poland (?)	200 k€

These are upper limits. If anybody is willing to save more, pls let us know.

Abstract:

Medical imaging is meanwhile by far the largest single source of exposure to ionizing radiation. In contradiction to the wanted reduction of this exposure burden to the public this value is still increasing because more and better anatomical information is very helpful for an optimal diagnosis. In addition, functional information is now available especially by means of three dimensional nuclear medical imaging techniques. Since for such methods a radiopharmaceutical is applied, there is an internal exposure in the range of a few mSv or more. Due to the higher sensitivity of children to ionising radiation and the longer expected life-time, these considerations are of paramount importance for paediatric nuclear medical imaging procedures. In addition optimisation for children differs from that for adults as 1) children are smaller and details of interest are smaller in children, and 2) radiologists require higher image quality in children to ensure high diagnostic confidence. The PET probe system developed within the MADEIRA collaborative project and new reconstruction techniques will allow an increased spatial resolution in PET if optimised for paediatric imaging. Together with optimised data sampling in terms of data geometry and acquisition schemes, automated detection and noise- and artefact reduction techniques, which needs to be developed within OCEANUM, these improved paediatric PET imaging will hopefully be achieved with lower administered activity to the children.
The optimisation will be done in close collaboration with clinical application optimisation resulting in automated and therefore more reliable diagnosis in paediatric PET. Regarding the optimised acquisition schemes we will

perform determination of activity curves in selected organs to come up with exposure-optimised application schemes.
A comparative dose evaluation and a corresponding risk estimate regarding new information about internal radiosensitivity in children will be performed by OCEANUM.