Joint Research Project BioQuaRT

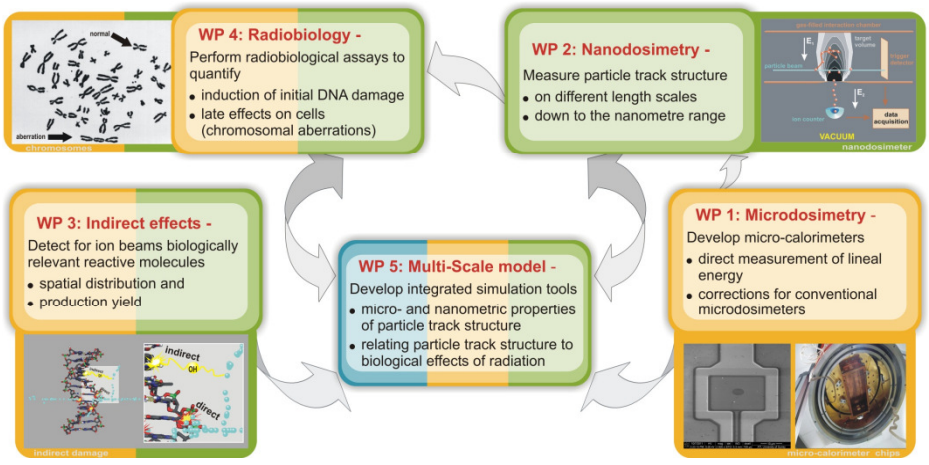
"Biologically weighted quantities in radiotherapy"

(June 2012 – May 2015)

Hans Rabus
on behalf of the BioQuaRT consortium

PTB Physikalisch-Technische Bundesanstalt Braunschweig und Berlin · ENEA · IRSN Institut de Radioprotection et de Sûreté Nucléaire · NPL National Physical Laboratory · ne si · itn · Politecnico di Milano · INFN Istituto Nazionale di Fisica Nucleare Laboratori Nazionali di Legnaro

JRP EMRP -SIB06 "BioQuaRT" Work package structure



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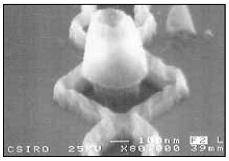
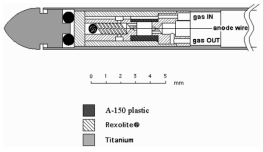
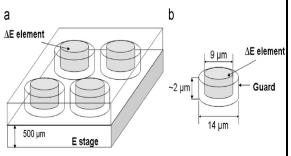
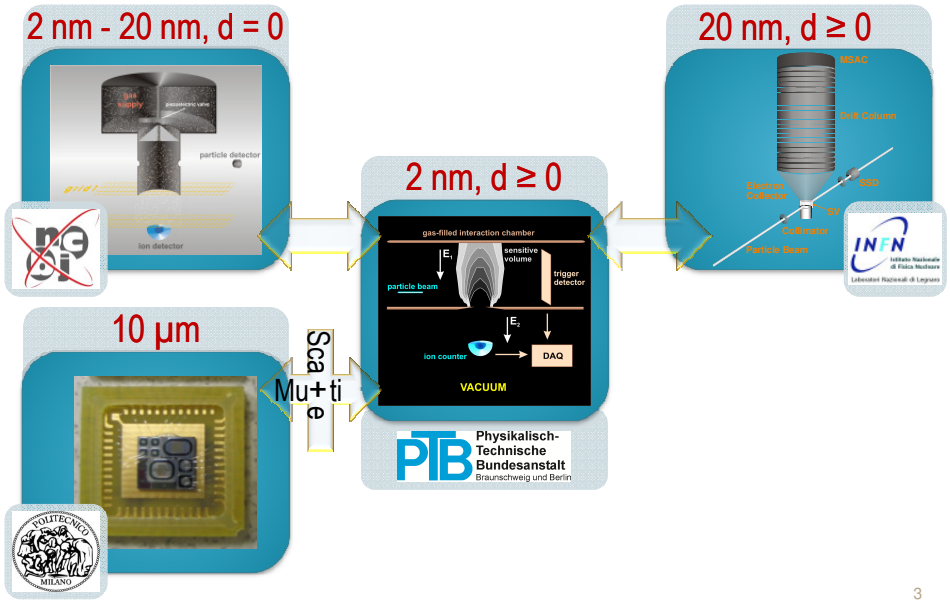
WP1: Microdosimetry

	**Microcalorimeter:** Measures energy deposition, medium is water equivalent	Cryogenic technology NPL National Physical Laboratory
	**Mini-TEPC** Sensitivity, flexible	Gas phase, measures ionisation INFN Istituto Nazionale di Fisica Nucleare Laboratori Nazionali di Legnaro
	**Si microtelescope** Condensed phase, simultaneous differential and total energy measurement	Measures ionisation, medium is non-water equivalent POLITECNICO MILANO

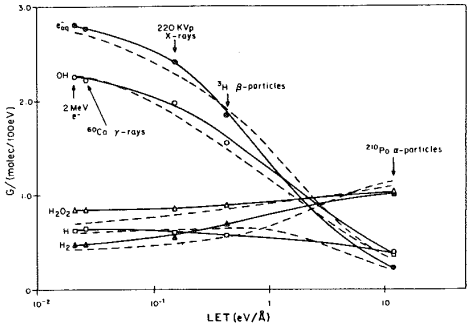
Work Package 2 – Nanodosimetry



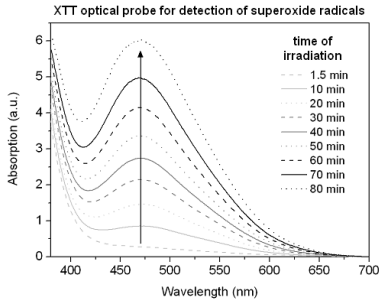
Work Package 3 – Indirect Effects

Biologically significant reactive species in bulk solution

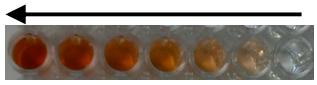
Quantification



Spatial distribution



Increasing O_2^- radical concentration



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Work Package 4: Biology

➢ Ion microbeam cell irradiations

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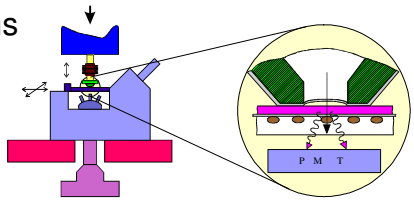
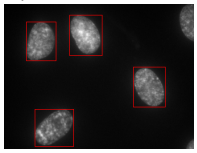
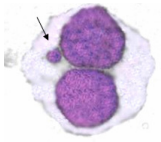


➢ γ-H2AX *foci*



➢ dicentric chromosomes

➢ micronuclei



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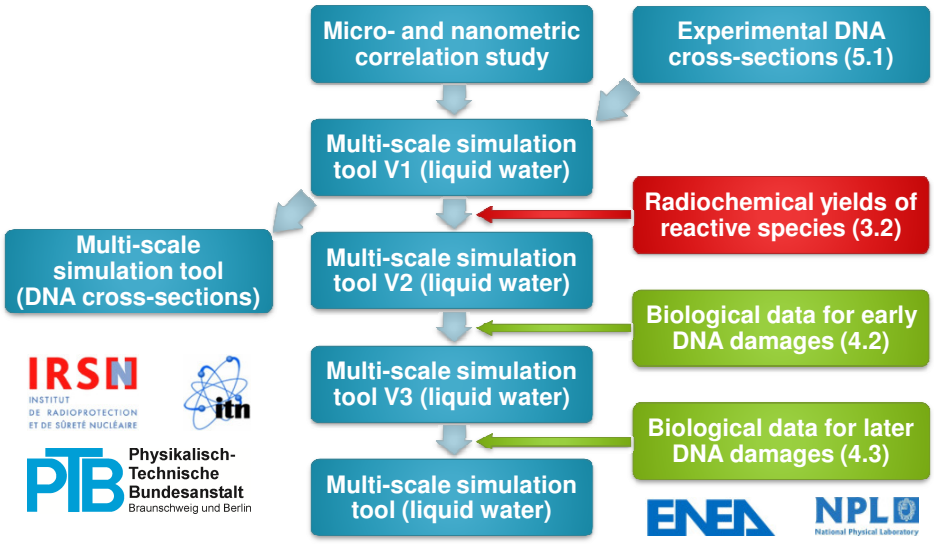
WP5 – Multi-scale modelling



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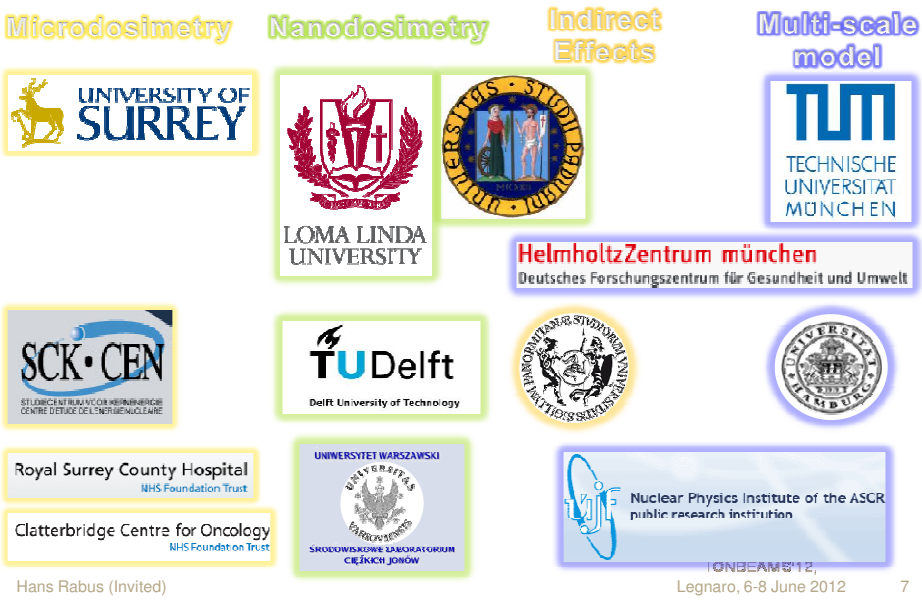
BioQuaRT Collaborators



Hans Rabus (Invited) IONBEAMS'12, Legnaro, 6-8 June 2012 7

Thank you for your attention!