# Scientific Programme

## Wednesday May 26, 2010

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| 13.00-13.05 | **Opening of the Symposium**<br>**Cai Grau -** Welcome to BiGART2010 and Aarhus. Practical information |
| 13.05-15.00 | **Session 1: Radiobiology**<br>Chairpersons: J. Overgaard and P. Lambin |
| | *Keynote lectures* |
| 13.05 | **Jens Overgaard, Aarhus:** Clinical radiobiology in Scandinavia |
| 13.25 | **Harry Bartelink, Amsterdam:** Individual adaptation of early breast cancer treatment |
| 13.45 | **John Yarnold, Sutton:** Tumour RT fraction size sensitivity; how variable is it? |
| 14.05 | **Rob Bristow, Toronto:** Predicting radiotherapy outcome using somatic genetics in prostate cancer |
| 14.25 | **Jan Alsner, Aarhus:** Genetic variants and normal tissue toxicity after radiotherapy |
| 14.45 | Discussion |
| 15.00-15.20 | Coffee break |
| 15.20-17.00 | **Session 2: Pre-clinical biological imaging of tumours**<br>Chairpersons: M. Nordsmark and E. Malinen |
| | *Keynote lectures* |
| 15.20 | **Vincent Gregoire, Brussels:** The use of functional imaging for radiotherapy planning: "plug and play" or how much validation do we need? |
| 15.40 | **Andreas Kjær, Copenhagen:** Molecular imaging with PET for tailored cancer therapy |
| 16.00 | **Michael Horsman / Thomas Nielsen, Aarhus:** Nano-based MR-approaches for imaging the tumour vasculature and microenvironment |
| | *Proffered papers* |
| 16.20 | **Kathrine Røe, Oslo:** Kinetic analysis of dynamic 18F-FDG PET imaging of prostate carcinoma xenografts – tumorbiological characterization and radiation response evaluation |

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| 16.30 | **Morten Busk, Aarhus:** Hypoxia PET imaging: defining the added value of dynamic scan protocols |
| 16.40 | **Åste Søvik, Oslo:** Adaptive radiotherapy based on contrast enhanced cone beam CT imaging |
| 16.50 | Discussion |
| 17.00-18.00 | **Poster viewing bar** |
| 18.45 | **Bus leaves** (front of hotel) |
| 19.00 | **Welcome reception – AROS Art Museum, City Center**<br>Guided tours start at 19.15<br>Dinner 20.00 |

**Please remember your entrance ticket (available at registration desk)**

## Thursday May 27, 2010

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| 8.20 - 10.20 | **Session 3: Functional imaging and treatment planning**<br>Chairpersons: K. Tanderup and V. Gregoire |
| 8.20 | **Vincent Gregoire, Brussels:** Introduction |
| | *Keynote lectures* |
| 8.30 | **Uulke van der Heide, Utrecht:** Functional imaging of prostate: from radiology to radiotherapy |
| 8.50 | **Anca-Ligia Grosu, Heidelberg:** PET for GTV delineation in brain tumors |
| 9.10 | **Stine Korreman, Madison:** Feasibility and robustness of dose painting by numbers using arc therapy techniques |
| | *Proffered papers* |
| 9.30 | **Søren Haack, Aarhus**: Distribution of low diffusion regions as observed with diffusion weighted MRI in relation to GEC ESTRO targets used for brachytherapy in locally advanced cervical cancer |
| 9.40 | **Indira Madani, Ghent:** Adaptive dose painting by numbers for head and neck cancer |
| 9.50 | **Fredéric Duprez, Ghent:** A phase I clinical trial on adaptive dose painting by numbers for head and neck cancer: the first clinical results |
| 10.00 | **Anne K. Due, Copenhagen:** Methodologies for localizing head and neck cancer recurrences in relation to radiation therapy target volumes |
| 10.10 | Discussion |
| 10.20 - 10.50 | Coffee break and poster viewing |
| 10.50 - 12.00 | **Session 4: Imaging of normal tissue function**<br>Chairpersons: M. Høyer and J. Deasy |
| | *Keynote lectures* |
| 10.50 | **Yue Cao, Ann Arbor:** Functional imaging as a biomarker for radiation-induced normal tissue and organ toxicity |
| 11.10 | **Mike Partridge, Sutton:** Functional imaging of normal lung in radiotherapy |
| 11.30 | **Morten Høyer, Aarhus:** Functional imaging of liver for radiotherapy |
| 11.50 | Discussion |
| 12.00 - 13.00 | Lunch |

13.00 - 14.10 **Session 5: Functional imaging segmentation, registration and quantification**
Chairpersons: J. Lindegaard and U. van der Heide

*Keynote lectures*

13.00 **Marc Kessler, Ann Arbor:** Tools of our trade: segmentation and registration for planning, delivery and adaptation

13.20 **Robert Jeraj, Madison:** How much can we trust images for Biology-guided Adaptive Radiotherapy?

*Proffered papers*

13.40 **Thea Sollien, Oslo:** Histogram analysis of pharmacokinetic parameters derived from dynamic contrast enhanced imaging

13.50 **Erlend Andersen, Oslo:** Histogram-based segmentation of regions at risk in cervical cancers by dynamic contrast enhanced MRI and pharmacokinetic modelling

14.00 Discussion

14.10 - 14.40 Coffee break
Poster viewing

14.40 - 16.40 **Session 6: Quantitative analysis and modelling of clinical outcome**
Chair: L. P. Muren and M. Partridge

*Keynote lectures*

14.40 **Philippe Lambin, Maastricht**: Voxel control / complication probability

15.00 **Eirik Malinen, Oslo:** TCP modelling of biological image guided radiotherapy

15.20 **Joseph Deasy, St. Louis:** Are current NTCP models reliable guides for treatment plan optimization?

*Proffered papers*

15.40 **Iuliana Toma-Dasu, Stockholm:** Dose painting by numbers - are the practical limitations of the technique decreasing or increasing the probability of controlling the tumour?

15.50 **Pauliina Wright, Oslo/Aarhus:** Evaluation of adaptive radiotherapy of bladder cancer using image-based tumour control probability modelling

16.00 **Ivan Vogelius, Madison:** Risk of radiation pneumonitis is insensitive to hypofractionation with modern conformal radiation delivery techniques

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| 16.10 | **Tine Schytte, Odense:** Mean radiation dose to the heart and risk of cardiac toxicity in NSCLC treated with definitive radiotherapy |
| 16.20 | **Maria Thor, Aarhus:** Rectum motion and morbidity prediction: improved correlation between late morbidity and DVH parameters for rectum planning organ at risk volumes |
| 16.30 | Discussion |
| 16.40 - 17.30 | **Poster viewing bar** |
| 19.00 | **Conference dinner – Varna Mansion (next to Hotel Marselis)** |

## Friday May 28, 2010

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| 8.20 - 10.10 | **Session 7: Adaptive strategies and technologies**<br>Chairpersons: C. Grau and M. Kessler |
| | *Keynote lectures* |
| 8.20 | **Karin Haustermans, Leuven:** How to adapt the multimodal treatment in rectal cancer based on imaging? |
| 8.40 | **Richard Pötter, Vienna:** Is repetitive morphologic imaging valuable for Bigart?- Experience from MRI based adaptive cervix brachytherapy (GynART). |
| 9.00 | **Martin Fuss, Portland:** Strategies of assessing and quantifying post-treatment metabolic tumor response |
| | *Proffered papers* |
| 9.20 | **Anne Vestergaard, Aarhus:** Adaptive strategies for radiotherapy of bladder cancer – a feasibility study |
| 9.30 | **Marianne Knap, Aarhus:** Daily cone-beam computed tomography used to determine tumour shrinkage in lung cancer patients |
| 9.40 | **Sune K. Buhl, Herlev**: Clinical evaluation of 3D/3D MRI-CBCT automatching on brain tumors for online patient setup verification – A step towards MRI-based planning |
| 9.50 | **Per R. Poulsen, Aarhus:** DMLC tracking of moving targets with a single kV imager for static field treatments |
| 10.00 | Discussion |
| 10.10 - 10.30 | Coffee break |
| 10.30 - 11.40 | **Session 8: Particle therapy**<br>Chairpersons: D. R. Olsen and R. Pötter |
| | *Keynote lectures* |
| 10.30 | **Håkan Nyström, Uppsala:** The role of protons in biologically guided adaptive radiotherapy |
| 10.50 | **Stephanie Combs, Heidelberg:** Heidelberg Ion Therapy Center - Experience with the first 100 patients |

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| | *Proffered papers* |
| 11.10 | **Per Munck af Rosenschöld, Copenhagen:** On-line adaptive intensity modulated proton therapy of lung cancer – a treatment planning study of 2D tracking |
| 11.20 | **Niels Bassler, Aarhus:** Dose- and LET-painting with particle therapy |
| 11.30 | Discussion |
| 11.40 - 12.00 | **Session 9: Conference wrap-up**<br>Chairperson: L.P. Muren |
| | *Keynote lecture* |
| 11.40 | **Dag Rune Olsen, Bergen:** BiGART2010, impressions and future aspects |
| 12.00 | Closing of the meeting |

# Posters

**on display throughout the meeting**

1. Daily KV cone-beam CT and deformable image registration as a method for studying dosimetric consequences of anatomic changes in adaptive IMRT of head and neck. Ulrik Vindelev Elstrøm, Aarhus, Denmark

2. Investigation of respiration induced intra- and inter-fractional tumour motion using a standard Elekta Cone Beam CT. Karina Lindberg Gottlieb, Odense, Denmark

3. A novel mathematical model for the radiobiological evaluation of an adaptive course of treatment. Francisco Cutanda Henríquez, Madrid, Spain

4. Investigation of the dosimetric impact of a Ni-Ti fiducial marker in carbon and proton beam. Rochus Herrmann, Aarhus, Denmark

5. Neutron fluence in antiproton radiotherapy measurements and simulations. Niels Bassler, Michael Holzscheiter, Heidelberg, Germany

6. ConeBeam CT for setup of patients with cancer in the cervix uterus: Comparing 3D match with 6D match on the whole body as well as soft tissue. Kirsen Legård Jakobsen, Herlev, Denmark

7. Feasibility and Sensitivity Study of Helical Tomotherapy for Dose Painting Plans. Robert Jeraj, Madison, USA

8. Uncertainty of textural features in PET images due to different acquisition mode and reconstruction parameters. Robert Jeraj, Madison, USA

9. Robustness of Apparent diffusion coefficient (ADC) diffusion weighted MR imaging in cervical cancer. Dependence on B-values used. Jesper Folsted Kallehauge, Aarhus, Denmark

10. Adaptive field margin: Accounting for interfraction motion variation offers negligible effect for most patients. Stine Korreman, Copenhagen, Denmark

11. Investigation of breast Setup accuracy using both surgical clips and patient anatomy with the Exactrac ® and 2D/3D on-board imager ® systems. Brian Kristensen, Herlev, Denmark

12. Changes in target delineation for high grade glioma using 18 FDG PET fused with MRI and CT. Yasmin Alexandra Lassen, Aarhus, Denmark

13. Residual rotational set-up errors after daily cone-beam CT image guidance in locally advanced cervical cancer. Louise Vagner Laursen, Aarhus, Denmark

14. Identifying hypoxia in human tumors: a correlation study between FMISO PET and the Eppendorf oxygen electrode. Lise Saksø Mortensen, Aarhus, Denmark

15. Non-invasive imaging of combretastatin activity in different tumour models: association with more invasive estimates. Thomas Nielsen, Aarhus, Denmark

16. Influence of the fixation and imaging protocol on the treatment margin for thoracic patients – a multi centre study. Tine Bjørn Nielsen, Odense, Denmark

17. IGRT in squamous cell carcinoma esophageal cancer – experiences with cone beam CT. Marianne Nordsmark, Aarhus, Denmark

18. Single institution experience from 100 patients included in Danish Breast Cancer Cooperative Group (DBCG) radiation protocols: compromise is necessary between dose to the left anterior descending coronary artery and breast clinical target volume. Birgitte Offersen, Aarhus, Denmark

19. On the potential use of alanine for small field output factor determination in high energy photon beams – a Monte Carlo study. Rickard Ottosson, Herlev, Denmark

20. Evaluation of NSCLC patient setup accuracy by investigating 3 and 6 degrees-of-freedom CBCT auto matches, based on whole thorax, columna vertebralis and GTV. Wiviann Ottosson, Herlev, Denmark

21. Influence of MLC leaf width on biologically adapted IMRT plans. Jan Rødal, Oslo, Norway

22. Comparison of manual and automatic segmentation for FDG PET based tumor delineation in head and neck cancer. Hella M.B. Sand, Aalborg, Denmark

23. Dose calculation in biological samples in a mixed neutron-gamma-field at the University of Mainz. Tobias Schmitz, Mainz, Germany

24. A phantom treatment planning study of the distribution of dose-averaged LET in small volumes irradiated with $^{12}C$. Christian Skou Søndergaard, Aarhus, Denmark

25. A study of image-guided radiotherapy of bladder cancer based on lipiodol injection in the bladder wall. Jimmi Søndergaard, Aarhus, Denmark

26. Identifying pH independent hypoxia induced genes in human squamous cell carcinomas in vitro. Brita Singers Sørensen, Jan Alsner, Aarhus, Denmark

27. Propagation of target and organ at risk contours in prostate radiotherapy using deformable image registration. Sara Thörnqvist, Aarhus, Denmark

28. Stereotactic body radiotherapy: Relationship of setup errors to body mass index and treatment time. Esben Schjødt Worm, Aarhus, Denmark