Stockholm University Research Centre for Radiation Protection Research
CRPR

www.crpr-su.se

Summary of activities for 2014

Introduction

With the establishment of CRPR in October 2008, Stockholm University wants to promote excellence and long term national competence in radiation protection research. Stockholm University has a long standing tradition in education and research on the effects of ionizing radiation on man and the environment. The location of CRPR at the Stockholm University provides CRPR with a unique set up of radiation facilities for investigations of effects of low doses and dose rates of low and high LET radiation. CRPR shall promote international cooperation and invite colleagues in Europe to use the low dose and dose rate exposure facilities. Moreover, CRPR represents the SU in the council of the MELODI initiative.

The Centre was created as an independent unit within the Department of Genetics, Microbiology and Toxicology (GMT) at Stockholm University at the Science Faculty of Stockholm University and comprises researchers who are active within the fields of radiobiology, radioecology and radiation dosimetry. In January 2013 GMT fused with two other institutes to form the new Department of Molecular Biosciences, The Wenner-Gren Institute – MBW (http://www.su.se/mbw/).

The Centre is headed by a Board of five members, one for each of the three research fields and two others whose competence is judged to be of value for the Centre's operation. The Board members and the chairperson of the board are appointed for three years by the Chancellor based on the recommendations of the Board of the Faculty of Science. The Board has the overall responsibility for the Centre's operation and programme.

The Head of the Centre is appointed for a three year period by the chancellor after hearing the Faculty of Sciences and the board of MBW. The head of the Centre shall not be a member of the board. The Head of the Centre is in charge of the daily activities and should be an employee of the University.

The activities of the Centre are financed from external sources.

From 2013, the webpage of CRPR is http://www.crpr-su.se.

Activity during 2013

Head CRPR 2014

Andrzej Wojcik,	Professor, MBW, Stockholm University

CRPR board 2014

Eva Forssell-Aronssson,	Professor, Chairperson, Dept of Radiation Physics, Sahlgrenska Academy at University of Gothenburg
Eva Simic,	Head of research, SSM
*Hooshang Nikjoo**,	Professor, Medical Radiation Physics, Dept of Oncology-Pathology, Karolinska Institutet
Mats Harms-Ringdahl,	Professor, MBW Stockholm University
Clare Bradshaw,	Associate professor, Department of Ecology, Environment and Plant Sciences, Stockholm University

*: Hooshang Nikjoo submitted his resignation on 11th February 2013 (see attachment). He will be replaced by Iuliana Toma Dasu from 2015.

The CRPR board met only one time in 2014. Appropriate dates for more meetings were sought, but it was not possible to find a date where all could be present. The minutes from the meeting is attached as annex.

Support has been provided for the CRPR activities by the Swedish Radiation Safety Authority (SSM)

The activity of the CRPR is described below:

Workshops

Workshop: Biological basis of radiotherapy: where do we stand?
4-5 September 2014, Stockholm, Sweden
Venue: The Royal Academy of Sciences

The workshop was attended by nearly 100 participants. The program is attached. More information can be found here: http://www.crpr-su.se/RT/

CRPR Seminars

Radiation biology of normal tissues: Scientific progress and perspectives
by: Prof. Wolfgang Dörr, University Vienna, 2014 01 09
Venue: Stockholm University

Looking under the hood of transcription using Bru-Seq
by: Prof. Mats Ljungman, University of Michigan, 2014 01 29
Venue: Stockholm University

Agricultural implications of the Fukushima nuclear accident
by: Prof. Tomoko M. Nakanishi, University of Tokyo, 2014 10 21
Venue: Stockholm University

Development of radiomitigative protocol based on a combination of multiple pharmaceutical drugs

By: Ikuo Kashiwakura, Hirosaki University, Japan, 2014 12 04
Venue: Stockholm University

Leukaemia in mice induced by chronic exposure to low dose-rate gamma radiation
By: Tokuhisa Hirouchi, Institute of Environmental Sciences, Aomori, Japan, 2014 12 04
Venue: Stockholm University

Understanding mechanisms of radiation induced leukaemia and low doses effects with new mouse models and neutron-induced AML
By: Christophe Badie, Centre for Radiation, Chemical and Environmental Hazards, Public Health England, UK, 2014 12 04
Venue: Stockholm University

Other activities 2013

CRPR is one of the founding members of the MELODI association that started 2010 (http://www.melodi- online.eu/). MELODI is a European Platform dedicated to low dose radiation risk research. MELODI will propose R&T priorities for Europe in its field of competence and will seek the views of stakeholders on the priorities for research, keep them informed on progress made, and contribute to the dissemination of knowledge. CRPR is represented in MELODI by Mats Harms-Ringdahl, who is a member of the MELODI bureau. The 2014 MELODI meeting was organised in Barcelona (2014 09 7-9) and attended by Mats Harms-Ringdahl, Eva Forssell-Aronsson, Siamak Haghdoost and Andrzej Wojcik.

CRPR organized a course in radiation biology (15 credits) at Stockholm University for undergraduate and master students.

CRPR organized a European training course (CELOD, 31 March – 11 April 2014) at Stockholm University, within the WP3 program of DoReMi.

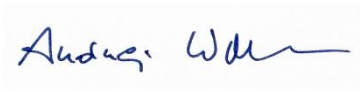
CRPR co-organised a European training course Environmental Radiobiology (Assessing Risk to Humans and the Environment, 10-20th June 2014), UMB, Norway within the WP3 program of DoReMi.

In June 2013 CRPR joined the 4 year, FP7 Euratom OPERRA project that will exploit the synergies of EURATOM and other EC programmes considering the most relevant joint program areas and mechanisms for funding joint activities in low radiation dose research. During 2014 an OPERRA workshop was organised by the CRPR entitled: "OPERRA Subtask 4.1.2 meeting with representatives from universities with the aim to make recommendations on how to make full use of the universities research potential for radiation risk research". It was attended by 24 university representatives from European countries. The outcome of the meeting is a list of recommendations to the EU about how the participation of universities in radiation risk research can be increased.

CRPR financially supported the meeting of SWE-RAYS, August 2014, Malmö University: http://swerays.se/workshops/Workshop%202014.html.

On October 17th 2014 Andrzej Wojcik gave a lecture at the Germen Federal Office of Radiation Protection (BfS) in Munich about the CRPR and its collaboration with SSM. The title of the lecture „Das Zentrum für Strahlenschutzforschung in Stockholm und die Zusammenarbeit mit der Schwedischen Strahlenschutzbehörde". The lecture was attended by ca 30 employees of BfS.

It was discussed on several occasions in the CRPR board that it is important to extend the education in radiation risk to schools. In 2014 a project was submitted to the Wallenberg foundation entitled: "How can teachers support the development of scientific literacy through teaching about risk and risk assessment?" The project is a collaboration between the SU, KTH and the Blackeberg high school in Stockholm. It received funding and will kick off in summer 2015. More information can be found here: http://www.su.se/mbw/about-us/news/general-news/the-marcus-and-amalia-wallenberg-memorial-fund-has-assigned-funds-for-a-three-year-project-1.212451



Andrzej Wojcik
Head of CRPR

Stockholm, 2014 01 16

Attachments: Minutes of CRPR council meeting
Resigning mail from Hooshang Nikjoo
Program of the Workshop Biological basis of radiotherapy: where do we stand?
The decision of SU´s Vice Chancellor to nominate the CRPR board for 2015-2017.

Stockholm University
Centre for Radiation Protection Research

Minutes of the board meeting of CRPR
5th March 2014, 16.30-18.00
MBW – Room E515
Stockholm University

People present: Eva Forssell-Aronsson, Clare Bradshaw and Andrzej Wojcik

1. *Opening of the meeting* *Eva FA*

Eva opened the meeting and welcomed all participants.

2. *Approval of agenda* *Eva FA*

The agenda was approved.

3. *Minutes from the meeting 2013 12 04* *Eva FA*

The minutes were approved.

4. *Selection of new member(s) of the CRPR board* *Andrzej/Eva FA*

Andrzej informed that on February 11th Hooshang Nikjoo resigned from the CRPR board. The resignation mail is attached as Annex I. In view of the fact that neither Lars Gedda nor Mats Harms-Ringdahl could participate in the meeting, Andrzej consulted them earlier by e-mail about a possible replacement, suggesting Iuliana Toma-Dasu from Fysikum of the SU, who is situated at KI. Both Lars and Mats agreed. The candidature of Iuliana was also approved by Eva FA and Clare. It was decided that Andrzej will apply to the board of the BMW for approval of Iuliana as the new member. Moreover, in accordance with an earlier discussion, it was discussed to enlarge the council by another member. Several candidatures were mentioned and it was decided that a decision will be made during a meeting when all member of the board are present.

5. *Course for journalists on radiation risk* *Andrzej*

Andrzej presented the program of a course organised by STUK that he previously received from Sisko Salomma. Andrzej will prepare the program of a local course based on this program. The organisation of the course suffered a delay, but it will be pursued.

6. *Planning for activities 2014* *Eva FA*

Iuliana Dasu and Andrzej pursue the organisation of a seminar on biological basis of radiotherapy. Applications for financial support were sent to VR, Cancerföreningen and Elekta. Andrzej will contact Jack Valentin and Richard Wakeford to check the possibility to organise a short seminar on the WHO and UNSCEAR/IAEA reports on health effects of Fukushima. Moreover, it is planned to invite Wolfgang Müller (Essen) who is completing the UNSCEAR report on probability of cancer causation by ionising radiation. SWE-RAYS contacted Andrzej with a suggestion to organise a CRPR seminar during the coming SWE-RAYS meeting in Malmö 2013 that is scheduled for August 2014. The board approved financing the costs of a speaker.

7. *How to involve more groups in the CRPR activities* *Eva FA*

The planned meeting with Swedish scientists about the status and future of radiation protection research on February 10th was not realised due to time constraints. It was discussed to organise the meeting in connetion with a seminar, perhaps that on biological basis of radiotherapy planned by Iuliana and Andrzej. Andrzej prepared an initial list of names of participants that will be completed by the CRPR council members.

8. *Additional questions*

No additional questions were raised. It was decided that the date of the coming meeting will be decided based on a Doodle poll.

Stockholm,

Eva Forssell-Aronsson Andrzej Wojcik

Andrzej Wojcik

Från: Nikjoo Hooshang <Hooshang.Nikjoo@ki.se>
Skickat: den 11 februari 2014 19:03
Till: Andrzej Wojcik; Clare Bradshaw; Eva Forssell-Aronsson (eva.forssell_aronsson@radfys.gu.se); Gedda, Lars; Mats Harms-Ringdahl; Simic, Eva
Ämne: CRPR membership

Andrzej,
I no longer wish to be a member of CRPR. Herewith, I submit my resignation from the CRPR.

Hooshang Nikjoo Ph.D, Professor
Radiation Biophysics Group
Department of Oncology-Pathology
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SE-171 76 Stockholm
Sweden
tel +46 8 517 724 90
cell 07 2300 8252
hooshang.nikjoo@ki.se

From: Andrzej Wojcik [mailto:andrzej.wojcik@su.se]
Sent: Tuesday, February 11, 2014 1:04 PM
To: Andrzej Wojcik; Clare Bradshaw; Eva Forssell-Aronsson (eva.forssell_aronsson@radfys.gu.se); Gedda, Lars; Nikjoo Hooshang; Mats Harms-Ringdahl; Simic, Eva
Subject: next CRPR board meeting

Stockholms universitet

Stockholm University
Centre for Radiation Protection Research

SWEDISH NATIONAL COMMITTEE FOR RADIATION PROTECTION RESEARCH
THE ROYAL SWEDISH ACADEMY OF SCIENCES

Workshop: Biological basis of radiotherapy: where do we stand?

4-5 September 2014, Stockholm, Sweden

With a history of more than 100 years, radiation therapy remains one of the main modalities used in the management of cancer together with surgery and chemotherapy.

The progress in treatment planning, image guidance and radiation delivery has led to the appearance of high precision radiotherapy that is a common feature in many clinics. Furthermore, the technological development of functional and molecular techniques for imaging the tumours has opened new possibilities for defining the target and devising the treatment in an innovative manner.

However important questions remain with respect to the relevant clinical and radiobiological aspects.

For radiobiology in particular, progress in research is not accompanied by a quick clinical implementation in spite of its translational character.

Classical radiobiology with its famous 5 R's and the linear-quadratic model for clonogenic survival has been the most influential component of the radiotherapy fractionation schedule design and calculations of isoeffects, while some modern findings do not easily find their way from bench to bedside.

This workshop aims to revisit the old school of radiobiology and identify new findings that have potential to impact on the clinical practice and lead towards the next big leap in clinical radiotherapy: the development of high precision individualised radiotherapy.

Organisers:

Iuliana Toma-Dasu - *Medical Radiation Physics, Stockholm University and Karolinska Institutet*
Andrzej Wojcik - *Centre for Radiation Protection Research, Stockholm University*
Emely Lindblom - *Scientific secretary - Medical Radiation Physics, Stockholm University and Karolinska Institutet*

Webpage: www.crpr-su.se/RT

Venue: The Swedish Royal Academy of Sciences, Stockholm, Sweden (http://www.kva.se/)

Stockholms universitet

Stockholm University
Centre for Radiation Protection Research

SWEDISH NATIONAL COMMITTEE FOR RADIATION PROTECTION RESEARCH
THE ROYAL SWEDISH ACADEMY OF SCIENCES

Workshop: Biological basis of radiotherapy: where do we stand?

4-5 September 2014, Stockholm, Sweden

Invited speakers:

Jan Bussink - *Radboud University Nijmegen Medical Centre, Nijmegen*

Roger Dale - *Department of Surgery and Cancer, Faculty of Medicine, Imperial College, London*

Alexandru Dasu- *Department of Radiation Physics UHL, Linköping University, Linköping*

Anna Dubrovska - *OncoRay Center for Radiation Research in Oncology, Dresden, Germany*

Marco Durante - *GSI Helmholtzzentrum für Schwerionenforschung, Darmstad*

Eva Forssell-Aronsson - *Sahlgrenska University Hospital, Gothenburg*

Jack Fowler - *University of Wisconsin Medical School, Madison, Wisconsin*

Ester Hammond - *Cancer Research UK and Medical Research Council Oxford Institute for Radiation Oncology, Oxford*

Jolyon Hendry - *Christie Hospital, Manchester*

Carsten Herskind – *Department of Radiation Oncology, Universitaetsmedizin Mannheim, Medical Faculty Mannheim, Heidelberg University, Mannheim*

Michael Joiner – *Department of Radiation Oncology at Wayne State University School of Medicine in Detroit, Michigan*

Wolfgang Sauerwein – *University Clinics Essen, Essen*

Klaus Trott - *University of Pavia, Italy*

Ingela Turesson – *Sahlgrenska Hospital, Göteborg*

Conchita Vens - *Experimental Therapy Division at the Netherlands Cancer Institute, Amsterdam*

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Workshop: Biological basis of radiotherapy: where do we stand?
PROGRAM

September 4, 2014

Introductory lecture

08:30-09:00	Radiobiology of clinical fractionated radiotherapy – Textbook versus new knowledge	Iuliana Toma-Dasu

Session 1 - What is the target of radiotherapy?

Chairperson: Rolf Lewensohn

09:00-09:40	The importance of tumour stem cells for radiotherapy	Anna Dubrovska
09:40-10:20	The importance of normal tissue stem cells for radiotherapy	Klaus Trott
Coffee break		
10:40-11:20	The importance of tumour environment for radiotherapy	Jan Bussink
11:20-12:00	From DNA and cell damage to tissue damage	Ingela Turesson

Lunch break

Session 2 - The classic 4 Rs of radiotherapy – are they still valid?

Chairperson: Mats Harms-Ringdahl

13:00-13:40	Repair of sublethal damage in tumour and normal tissue cells	Conchita Vens
13:40-14:20	Tumour cells reassortment within the cell cycle (including check points and cell cycle arrest)	Carsten Herskind
Coffee break		
14:40-15:20	Proliferation and accelerated repopulation in tumour and normal tissue	Jolyon Hendry
15:20-16:00	Hypoxia, reoxygenation and radiation sensitivity	Ester Hammond
Coffee break		
16:30-17:30	**General discussion**	Moderator: Claes Mercke

19:00 Dinner

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SWEDISH NATIONAL COMMITTEE FOR RADIATION PROTECTION RESEARCH
THE ROYAL SWEDISH ACADEMY OF SCIENCES

Workshop: Biological basis of radiotherapy: where do we stand?

September 5, 2014

Session 3 - The LQ model and its parameters

Chairperson: Per Nilsson

09:00-09:40	Radiobiological basis of the LQ model	Mike Joiner
09:40-10:20	The radiobiological modelling challenges of 21st century radiotherapy	Roger Dale
Coffee break		
10:40-11:20	LQ parameters – Does one size fit all? Heterogeneity in parameters versus one single set of parameters for all the cells in the tumour and normal tissue	Alexandru Dasu
11:20-12:00	Is there an optimal treatment time and fractionated schedule?	Jack Fowler
Lunch break		

Session 4 – New/old treatment modalities

Chairperson: Bo Stenerlöw

13:00-13:40	Biological basis of targeted radiotherapy	Eva Forssell-Aronsson
13:40-14:20	Biological basis of brachytherapy	Andrzej Wojcik
Coffee break		
14:40-15:20	Biological basis of hadron therapy	Marco Durante
15:20-16:00	Biological basis of neutron therapy	Wolfgang Sauerwein
Coffee break		
16:30-17:30	**General discussion and concluding remarks**	Moderator: Mike Joiner

17:30 – end of meeting

Stockholms universitet

UTDRAG UR PROTOKOLL
fört vid föredragning för rektor 2014-12-18

Ärende	Åtgärd
21. Utseende av föreståndare, styrelse samt ordförande för Stockholms universitets centrum för strålskyddsforskning (CRPR) (dnr SU FV-1.2.2-3555-14). *Föredragande: Emma Karmhed, Ledningskansliet.*	Rektor beslutar enligt förslag från Naturvetenskapliga fakultetsnämnden att för tiden t.o.m. 2017-12-31 utse professor Andrzej Wojcik, Institutionen för molekylär biovetenskap, Wenner-Grens institut, till föreståndare samt till ledamöter professor Eva Forsell Aronsson, Göteborgs universitet/ Sahlgrenska universitetssjukhuset, tillika ordförande, docent Clare Bradshaw, institutionen för ekologi, miljö och botanik, professor Mats Harms-Ringdahl, Institutionen för mokekylär biovetenskap, Wenner-Grens institut, docent Iulians Dasu, Fysikum och forskningschef Eva Simic, Strålsäkerhetsmyndigheten.

Detta beslut är fattat av rektor, professor Astrid Söderbergh Widding, i närvaro av prorektor, professor Hans Adolfsson, och förvaltningschefen, universitetsdirektör Joakim Malmström. Studeranderepresentanter har informerats och haft tillfälle att yttra sig. Övrig närvarande har varit Anna Riddarström, Ledningskansliet (protokollförare).
Ur protokollet

Emma Karmhed

Emma Karmhed