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Biomedical Radiation Sciences

Department of Radiology, Oncology and Radiation Sciences

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Projects

- Aim:

  Develop new radiation based methods for molecular imaging and therapy of tumours and metastases

  - Radiation-induced DNA damage and repair
  - Radionuclide molecular imaging
  - Targeted radionuclide therapy of head and neck cancer
  - Tools for characterization of heterogeneous protein interactions (LigandTracer)

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Available equipment

- Gamma radiation source
- CyFlow Cube –Flow cytomet
  cellsorter
- Pulsed-field gel electrophoresis
- LigandTracer and Interaction maps
- BioVis
  - Confocal microscopy
  - Electron microscopy etc.

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Assays and competence

- Radionuclide labelling techniques
  - ^{111}In,^{125}I, ^{68}Ga, ^{67}Ga, ^{14}C and others
- Tracer design
- Monolayer and spheroid cell culture
- LigandTracer
- WB
- ELISA
- Gel electrophoresis, SDS page
- Survival assays
- Immunohistochemistry
- Autoradiography

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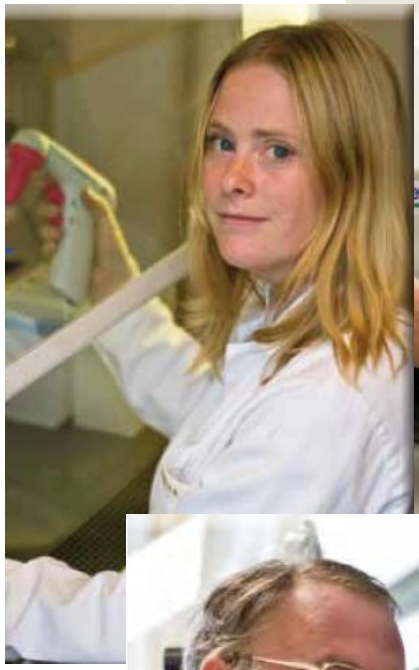
Group members

- Bo Stenerlöw
- Vladimir Tolmachev
- Marika Nestor
- Karl Andersson
- Jörgen Carlsson



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Bo Stenerlöw (Prof.)

Radiation-induced DNA damage and repair

- Interactions between proteins in major DSB repair pathways
  - NHEJ, potential role in regulation of other repair pathways
- DNA damage repair heterogeneity
  - DNA breaks generated by radiation with LET
- Connection between cell surface receptors and cell signaling proteins and DNA repair
  - targeting of these proteins to increase radiosensitivity

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Diana Spiegelberg
(Ph.D. student)

Combination treatment of Hsp90 inhibitors and radiation

- Hsp90 Chaperon
  - folding, assembly, translocation and degradation of proteins
- Client proteins participating in signaling, DNA repair and cancer progression
- Overexpression in different cancer types

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Diana Spiegelberg (Ph.D. student)

Combination treatment of Hsp90 inhibitors and radiation

- Characterization
  - Effect of 17AAG and AT13387 on:
    - survival/radioresistance
    - DNA repair after irradiation
    - Signaling and repair protein expression

- Application
  - Effect of 17AAG and AT13387 in combination with eternal radiation or targeted radionuclide therapy

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Thank you for listening

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