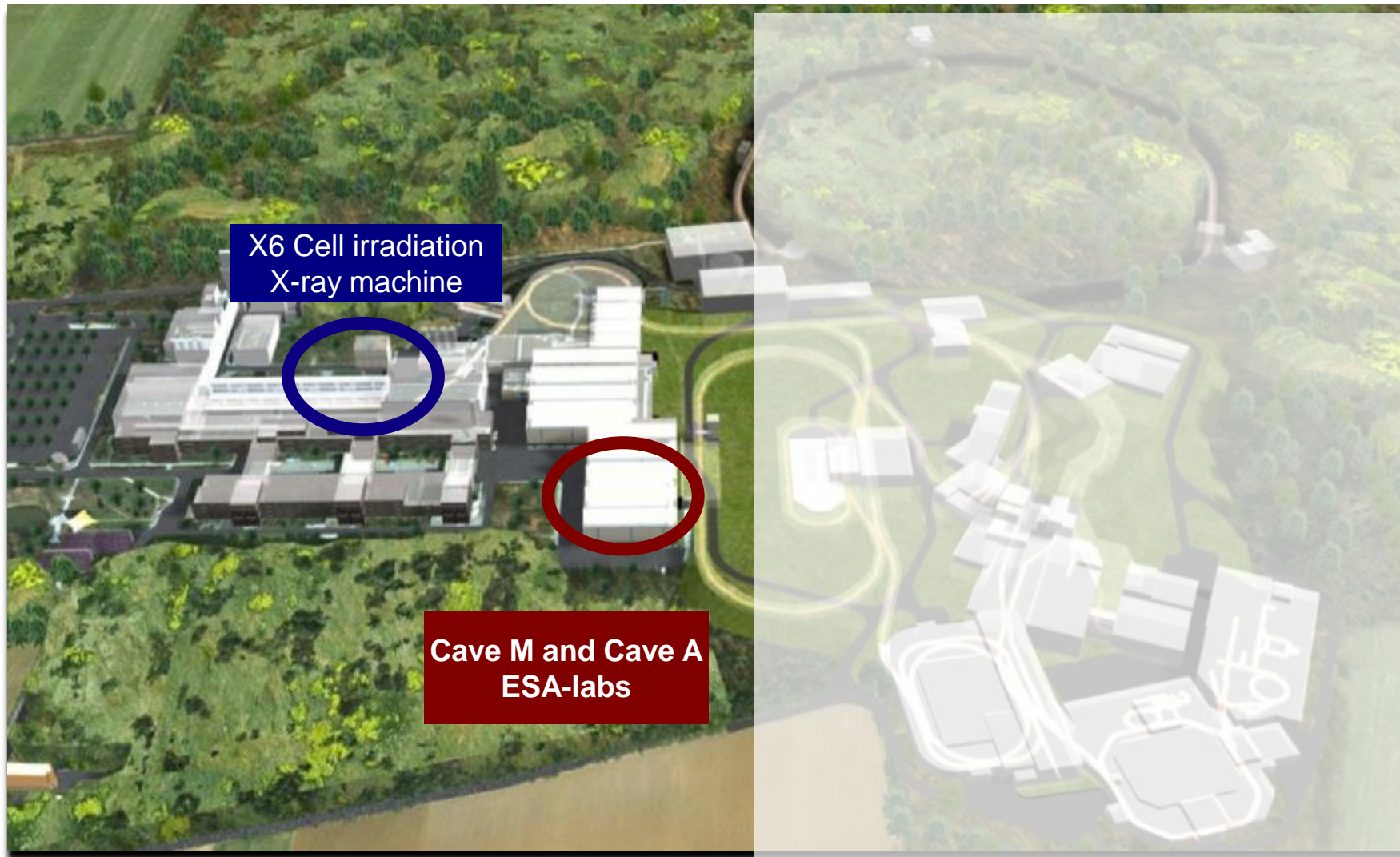
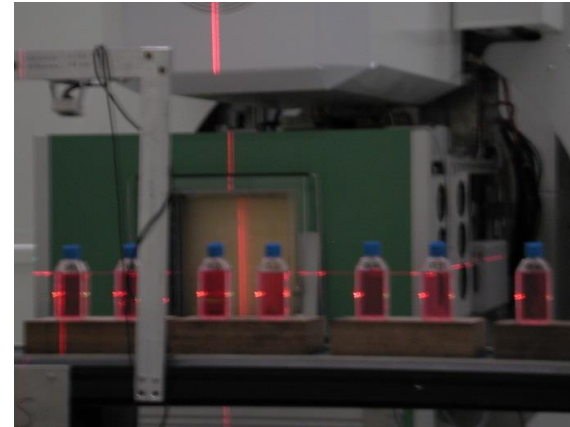




Radiobiological Experiments: Infrastructure, Requirements and Conditions

Sylvia Ritter



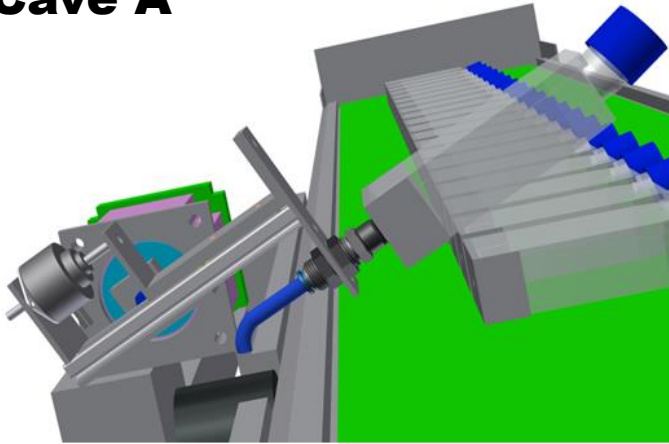


Conveyor-belt, camera and lasers

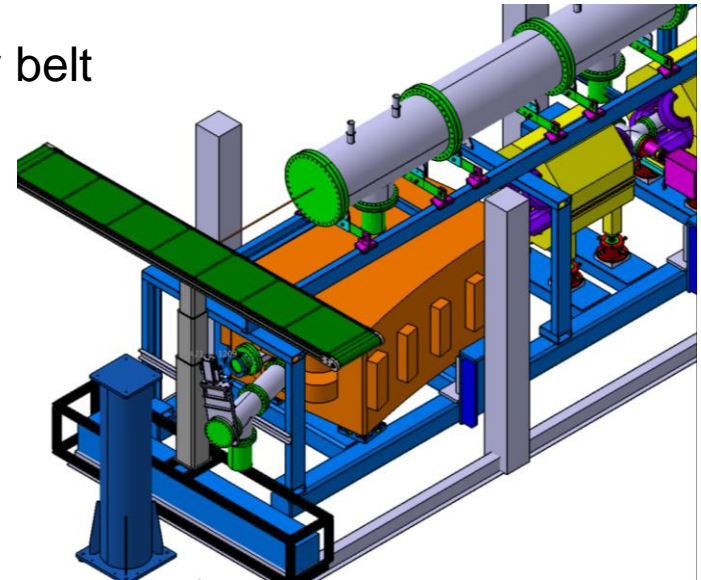
- Field Size: max. 20x20cm (active scanning): suitable for cell **culture flasks (max. 225 cm²)**, suitable for monolayers/3D-structures/cell suspension
- Automatic target positioning
- Entry into the cave, positioning ca. 5 mintotal time required for 5 to 10 samples: 30 min. (may be longer, depending on field size, dose, ..).
- Flasks have to be filled with medium, PBS etc. (75 ml/25cm²; 225ml/225cm²)
- Generally, samples are irradiated at room temperature

New sample changer (under construction)

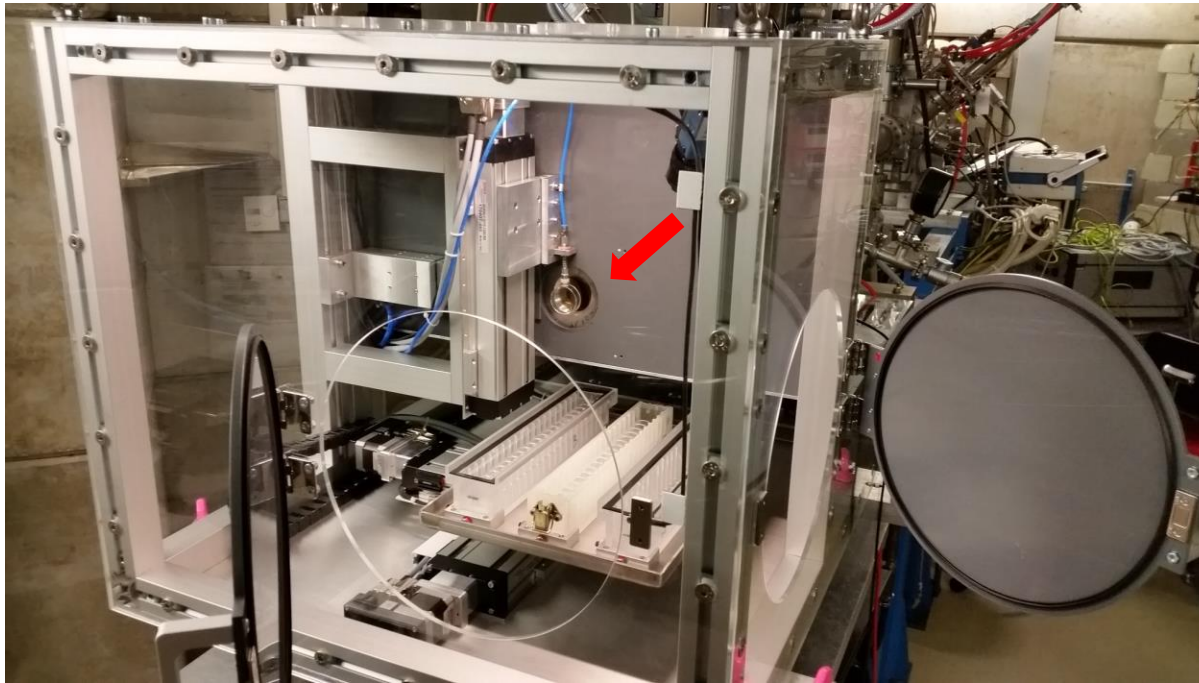
Cave A



conveyor belt



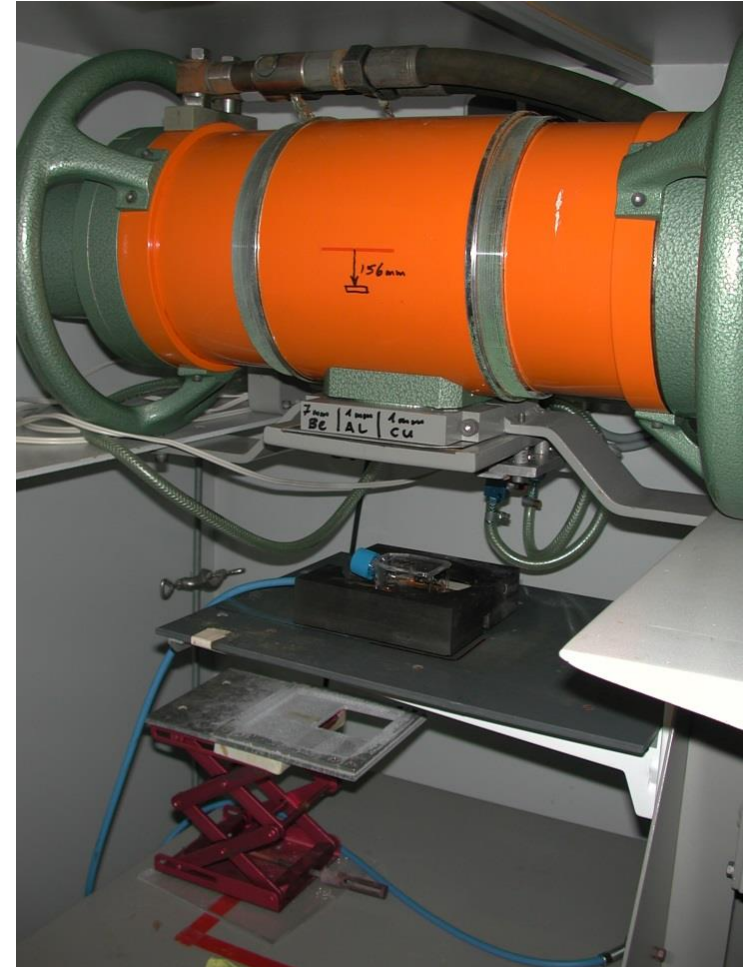
- Flasks (max. 75 cm²) are stored in horizontal position
- Lifted and irradiated
- Placed back in horizontal position
- Standard procedure: Irradiation at room temperature



- **35mm Ø Petri dishes – only suitable for cell monolayers**
- Max. 20 dishes/magazine
- Magazines have to be filled with medium/PBS... (~ 300ml)
- Generally, irradiation at room temperature

X-ray exposure

- Dose rate: 3 – 6 Gy/min
- 250 kV, 16 mA
- Petri dishes (max. Ø 15 cm)
- Cell culture flasks (max. 225 cm²)
- Irradiation at room temperature, on ice ...
- Access is restricted (GSI staff has to be present, when samples are exposed)



Biological laboratories

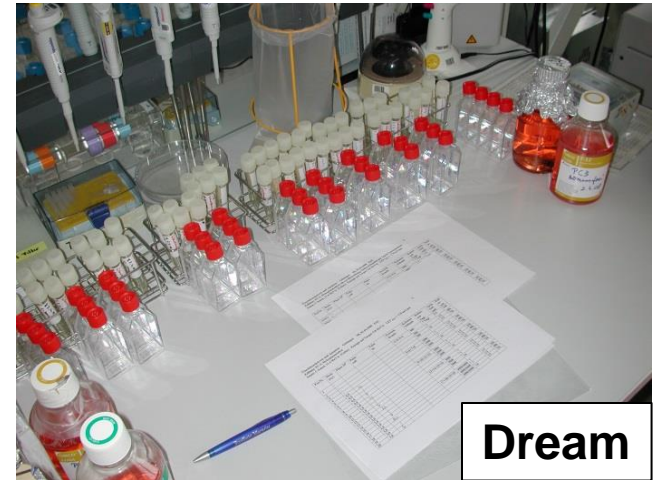
2 laboratories for cell and molecular biology

- incubators
- safety work benches
- electronic cell counter
- centrifuges
- microscope
- fume hood
- autoclave

Animal studies

- 1 room for animal housing (max. 120 mice)

Space is limited – particularly during beam-times !!



- Regulations at GSI allow only biosafety level S1 experiments (**no risk**), for further information contact G.Taucher-Scholz (g.taucher-scholz@gsi.de) or Anke Schott (a.schott@gsi.de).
- All persons entering the GSI bio-labs must comply with **yearly updated biosafety instructions** (certified by signature) in addition to the general GSI safety instructions.
- Specific regulations apply for experiments with **human blood** (specific instruction).
- To avoid any cross-contaminations, a certificate stating that the cells are **"mycoplasma free"** (by PCR or ELISA) is required. The testing should not be done in house but by a certified lab, for example: DSMZ (www.dsmz.de).

Safety Requirements



- All persons entering our labs require a **lab coat**, which have to be brought with to GSI.
- Applications of **hazardous chemicals** have to be announced and material safety data sheet (MSDS) has to be attached if needed.
- For all material transported to and from GSI **European transportation regulations** have to be respected.
- Persons intending to perform safety-raleted work at GSI are required to possess **advanced English skills**.
- Radiobiological experiments involving the **use of radioactive materials** are **not allowed** at GSI.
- **Consumables** have to be **provided by the user**.

Forms for SIS and UNILAC

- https://www.gsi.de/fileadmin/Biophysik/Dokumente/Strahlzeit/2010-0803_SIS_application_for_beamtime_scheduling.pdf
- https://www.gsi.de/fileadmin/Biophysik/Dokumente/Strahlzeit/2010-0803_UNILAC_application_for_beamtime_scheduling.pdf

APPLICATION FOR SCHEDULING BEAMTIME AT GSI

SIS

To apply for beam time for radiobiology experiments this form must be completed and returned to GSI Biophysics not later than 4 weeks before the experiment. For electronically file management per email to m.scholz@gsi.de and per FAX with signature to M. Scholz - FAX 0049-6159-71-2106.

Application for each beam-time

G.Taucher-Scholz and Anke Schott

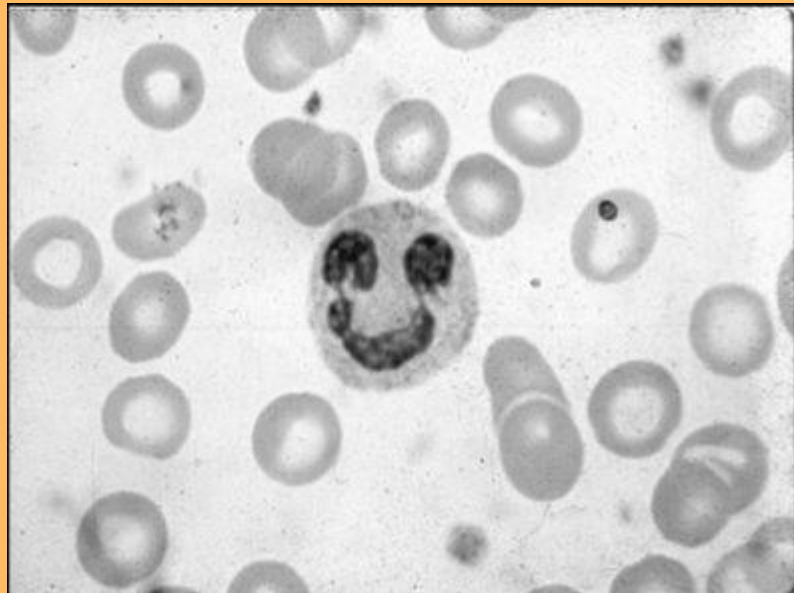
- Participants
- GSI-equipment needed
- Chemicals, gases and other equipment supplied by the investigator
- Biological objects (specification of the biological objects used for the experiment)

4.3 Human peripheral blood		<input type="checkbox"/> Yes	<input type="checkbox"/> No
Donor	<input type="checkbox"/> Healthy* ³	<input type="checkbox"/> Patient	
* ³ You have to enclose a certificate from an independent laboratory written in German or English with readable signature and date proving the serological absence of HIV, HCV and HBV.			
Confirmed absence of HIV, HBV, HCV	<input type="checkbox"/>	Certificate enclosed	<input type="checkbox"/>

If you need substantial assistance, collaboration with a (liaison) scientist from the biophysics department is mandatory.

- For each animal experiment an approval by the regional council (Regierungspräsidium Darmstadt) is necessary. The application has to be written in German.
- For the study trained personnel is needed (i.e. an official certificate confirming the qualification is required).

Questions???



- Early planning (people involved, biological objects, mycoplasma test, consumables.., instructions needed???)
- Ensure punctual sending of beam-time request, documents etc. to GSI