

2024/07/31

# REPAIR

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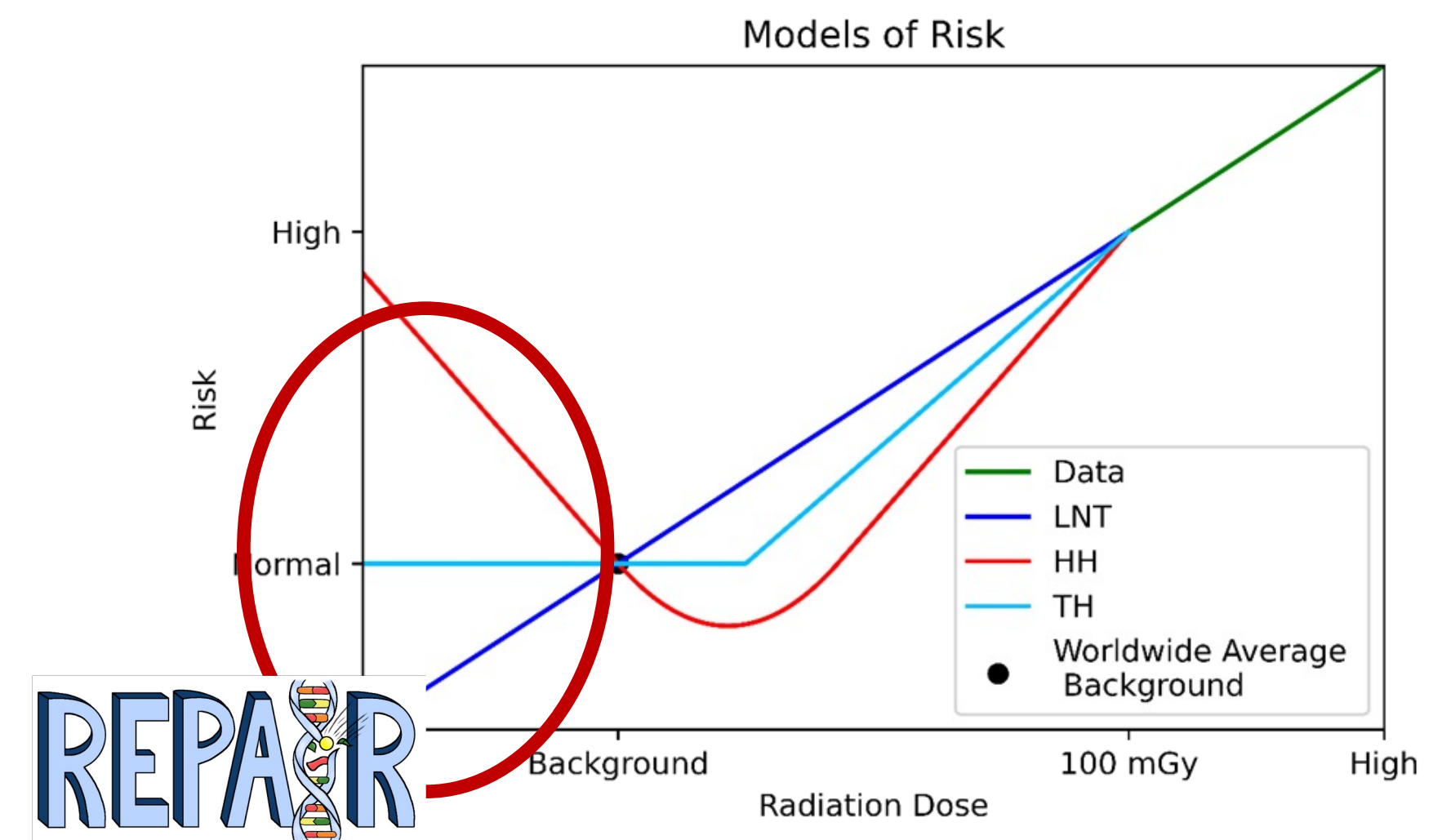
Michel R. Lapointe, Ph.D.  
Postdoctoral Fellow



# Experiment Overview

## REPAIR:

Researching the Effects of the Presence and Absence of Ionizing Radiation






# Experiment Overview

Creating a sub-NBR environment:

- Cosmic: SNOLAB
- Terrestrial (Gamma): Lead
- Inhalation (Radon): Air filtration
- Endogenous radioisotopes: Nutritional restriction\*

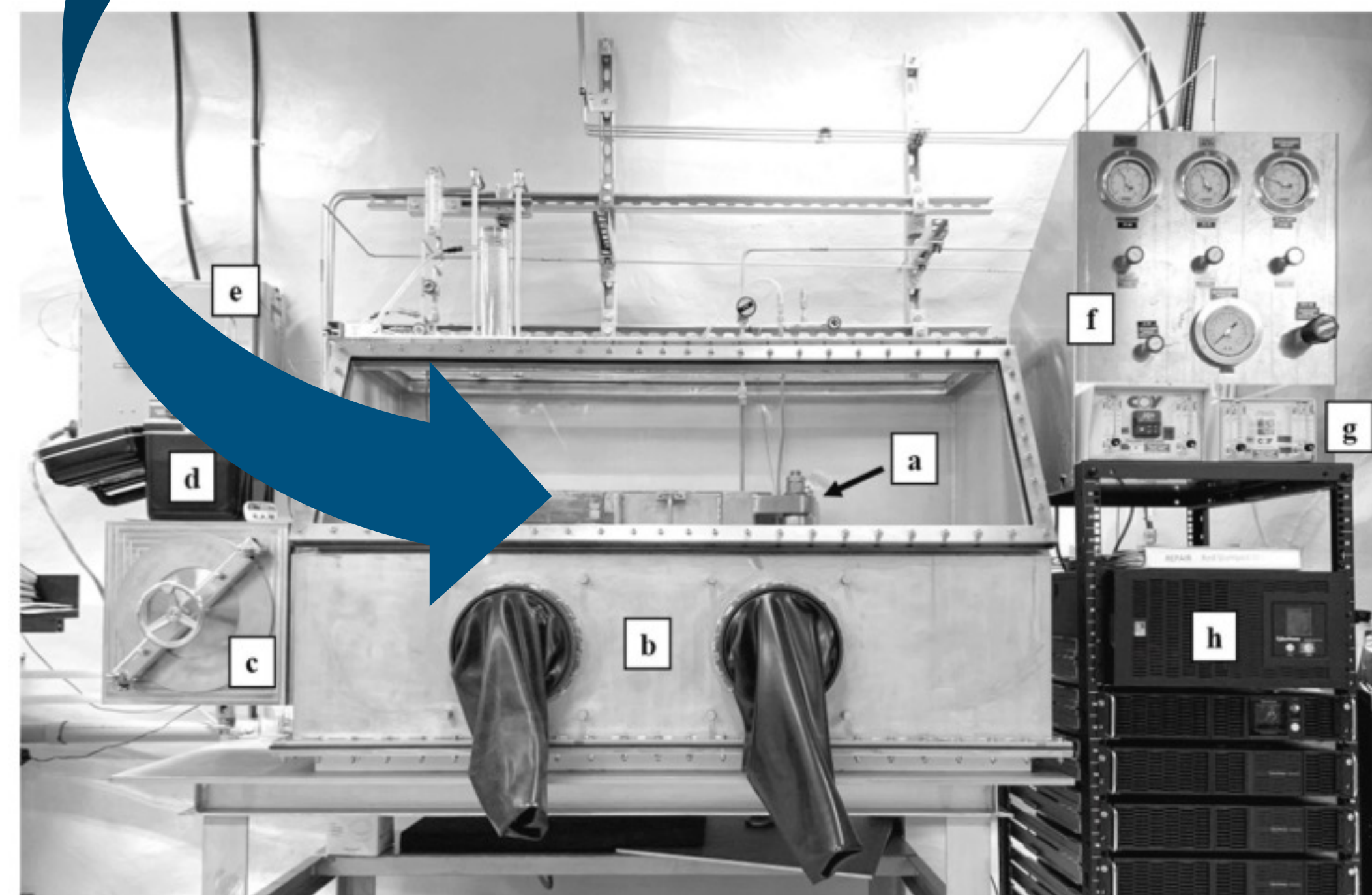
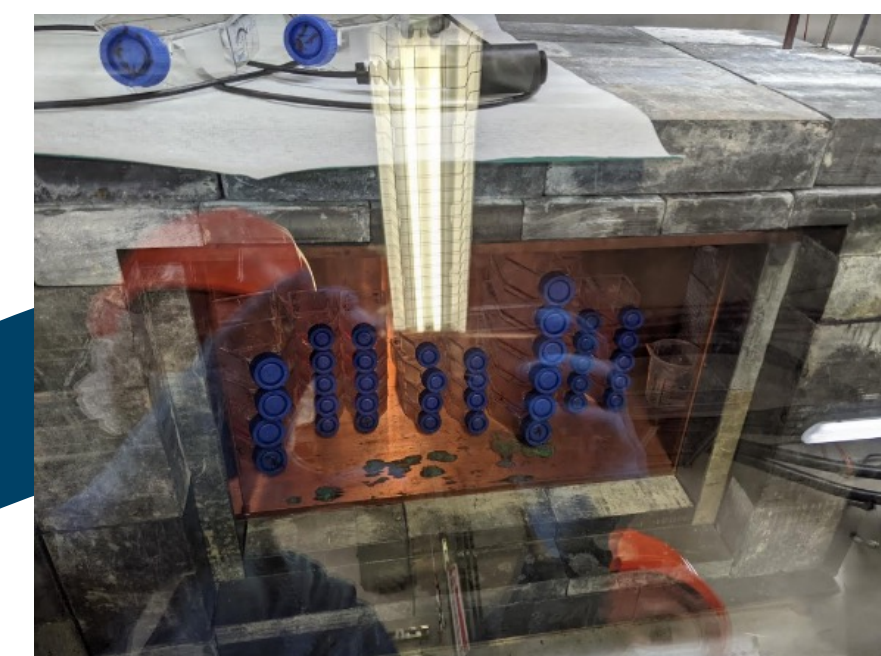




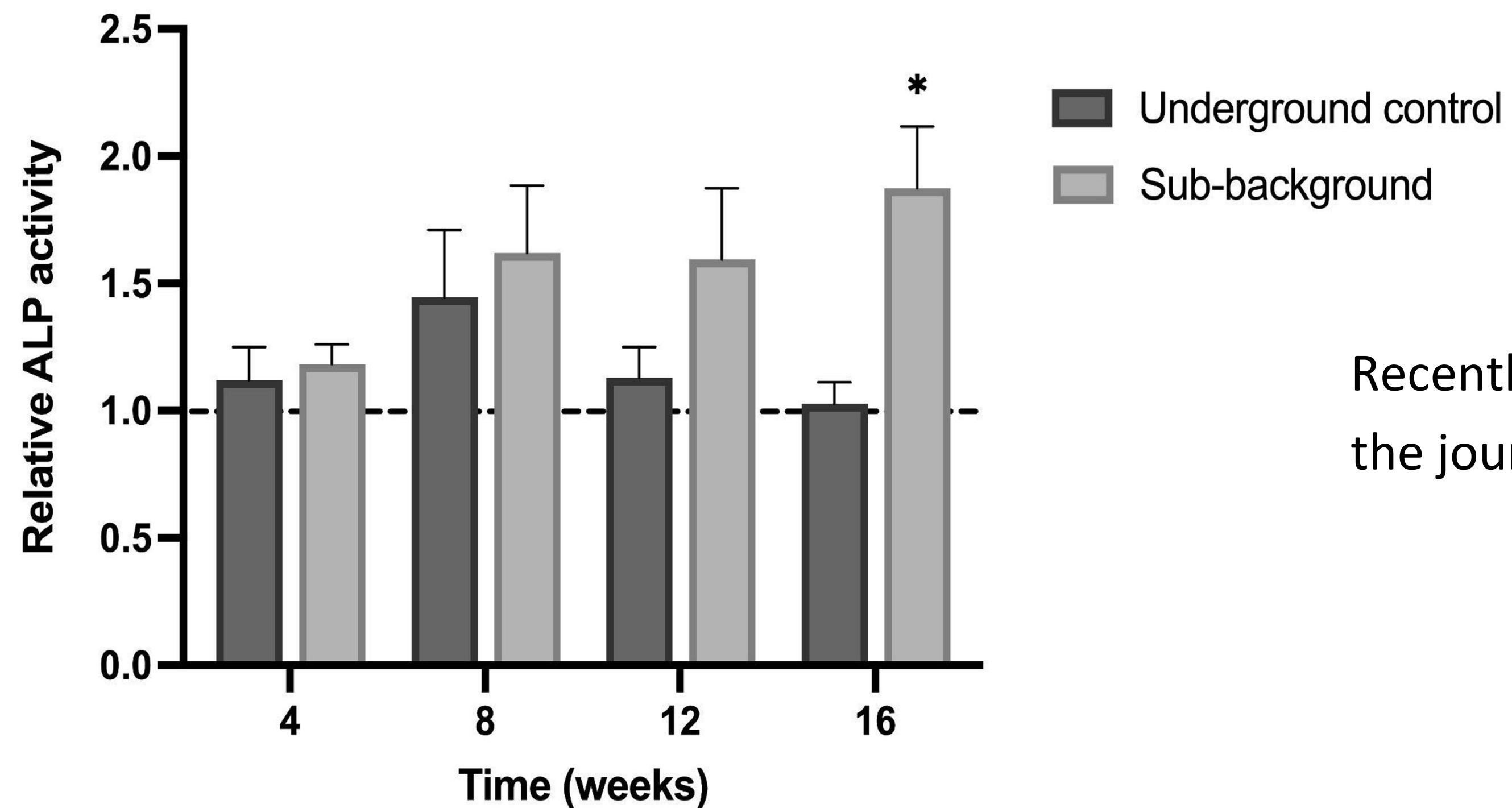
# Experiment Overview

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# New science developments

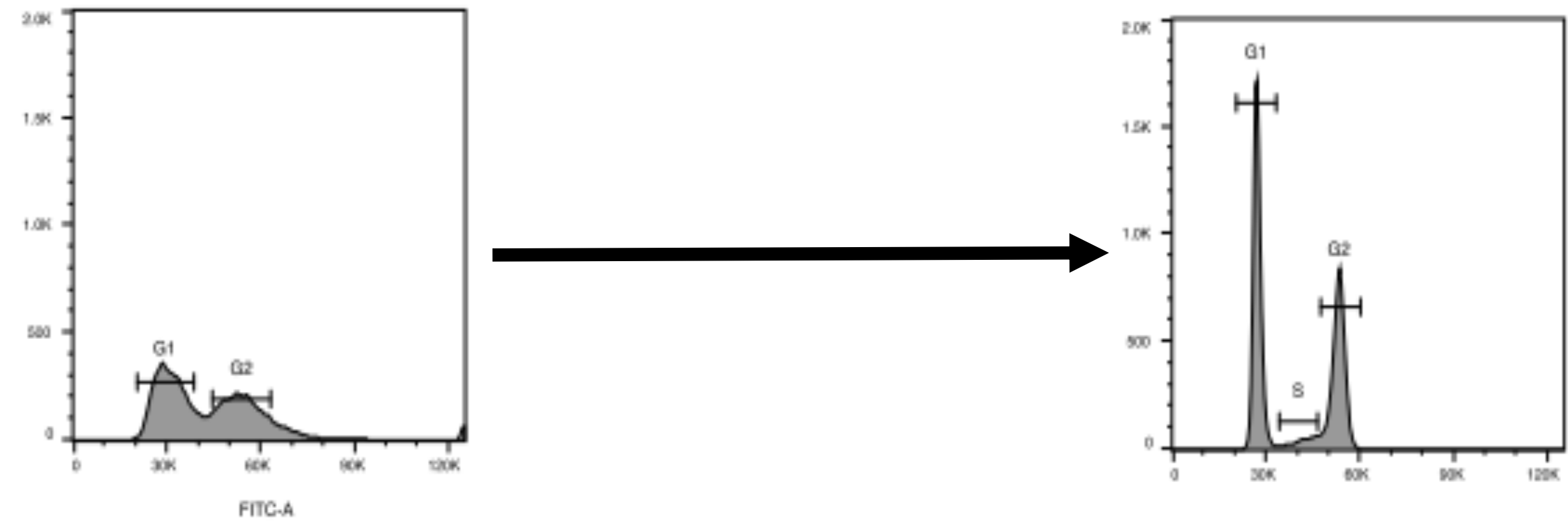


Recently accepted for publication in  
the journal: Radiation Research

# New science developments

Development of a flow-based assay for cellular ALPi activity

- Comparison with conventional transformation assay for validation
- Detect baseline transformation (~28/1,000,000)

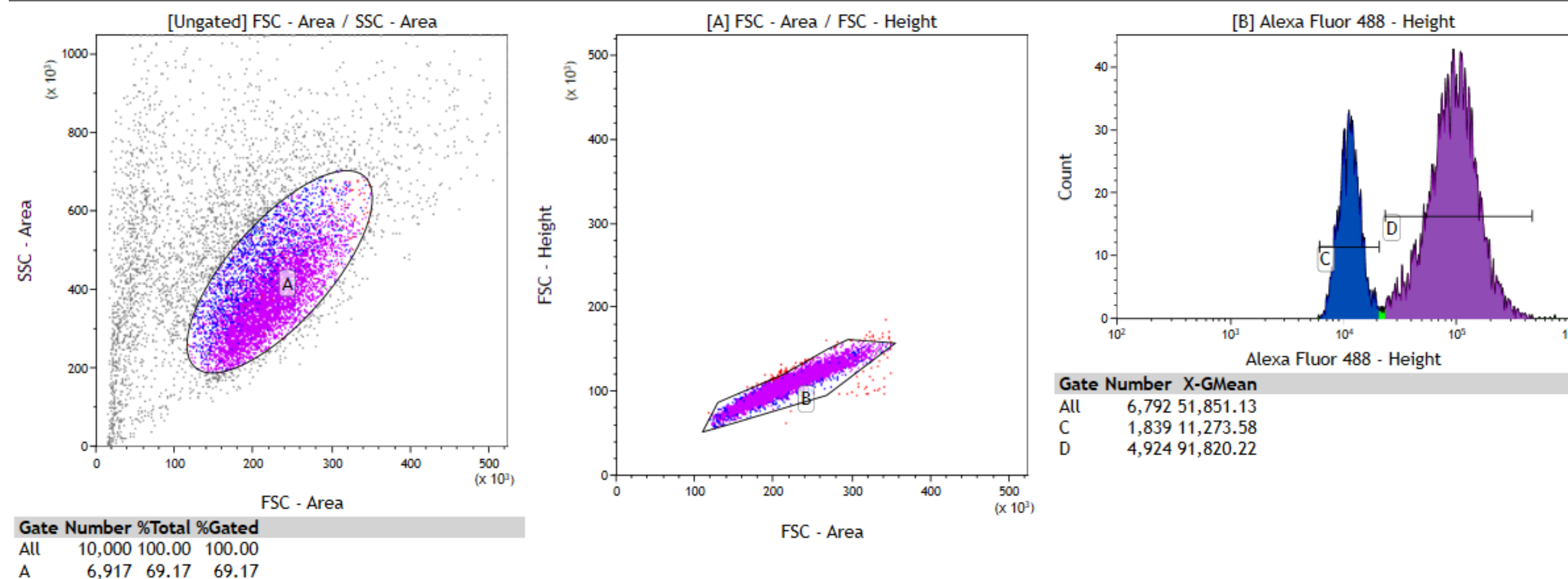




# New science developments

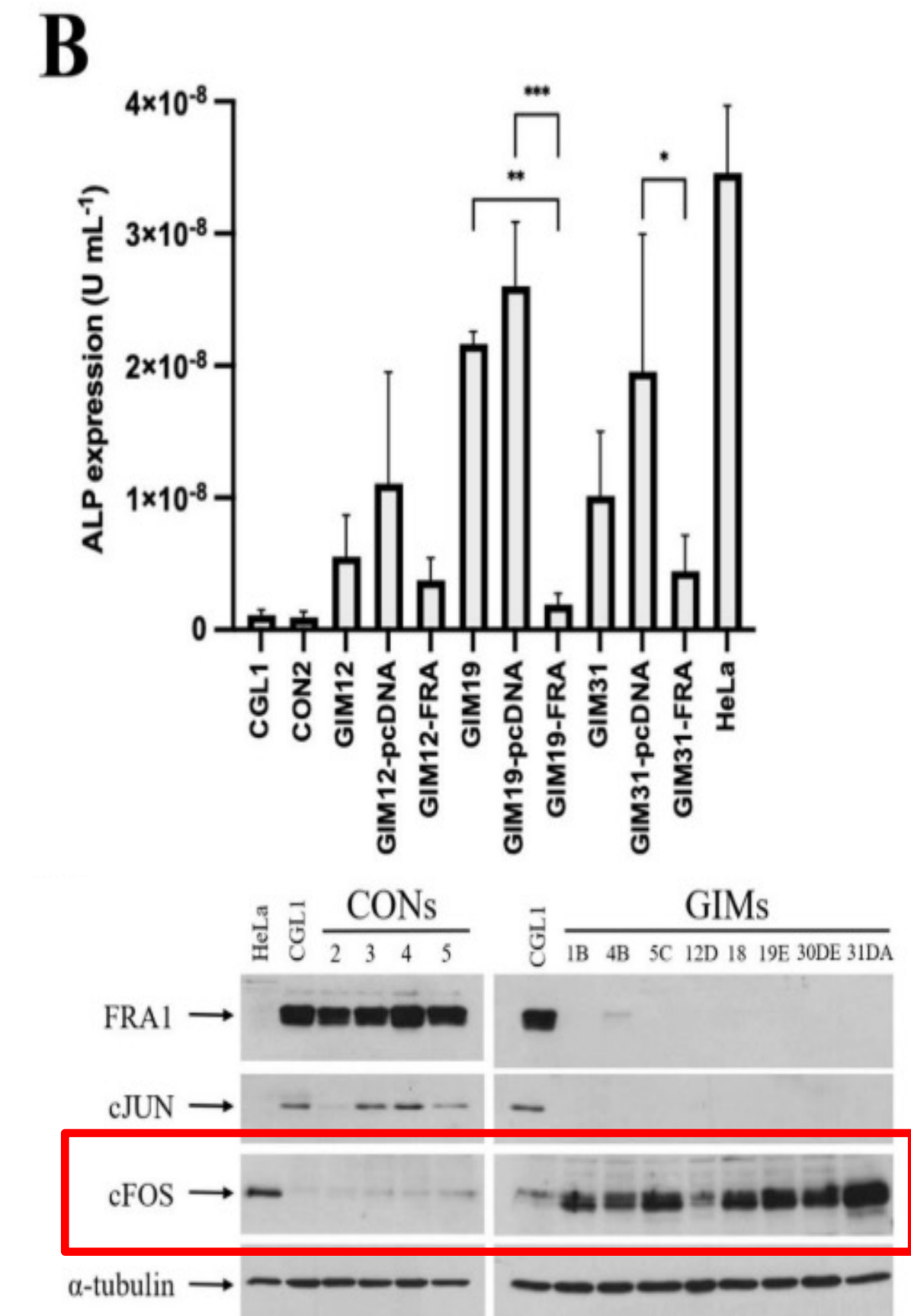
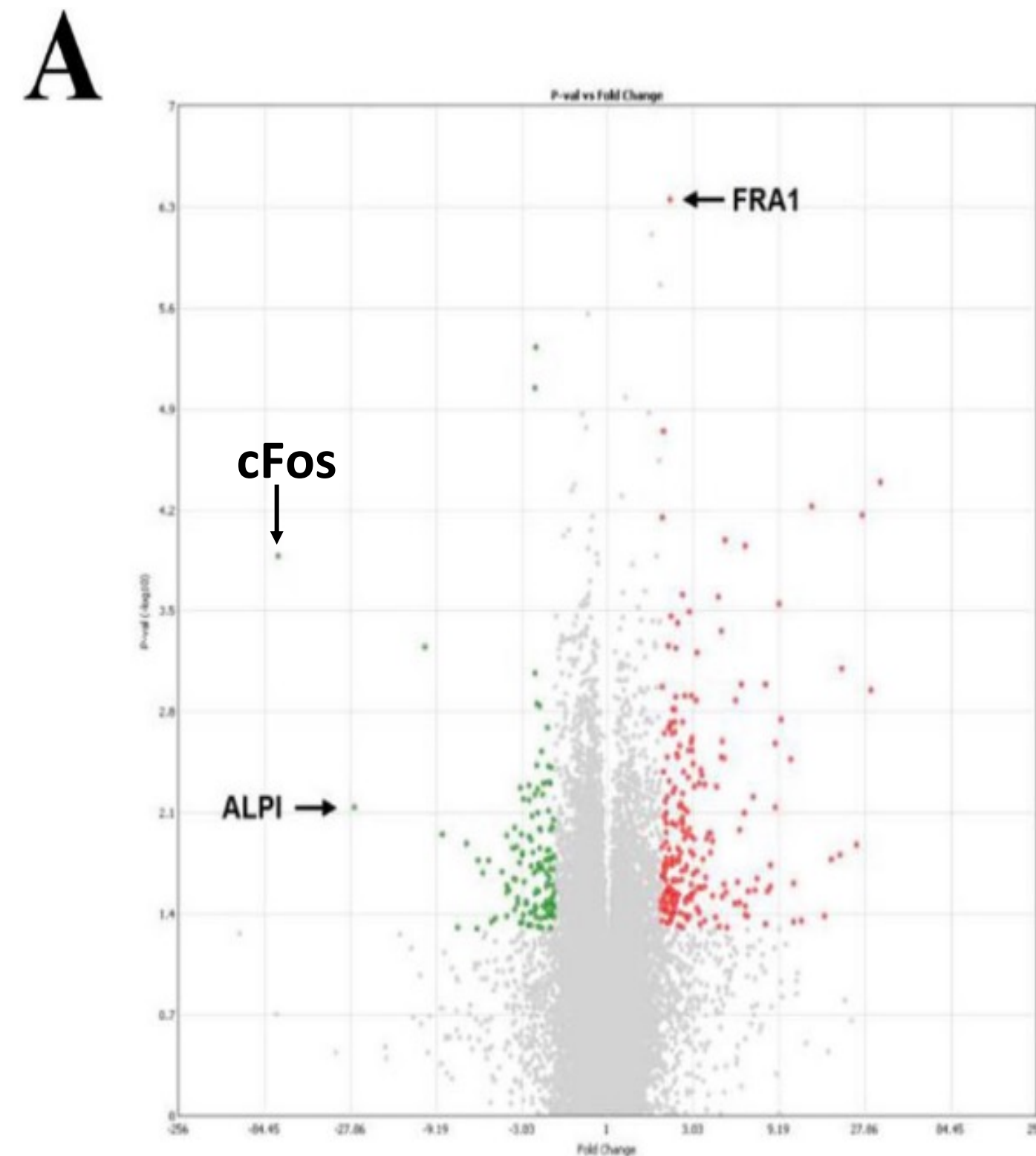
Development of a flow-based assay for cellular ALPi activity:

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# New science developments

Alternative markers:





# Collaboration Health

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Two new graduate and undergraduate students starting in the fall.  
Three summer student working through August.

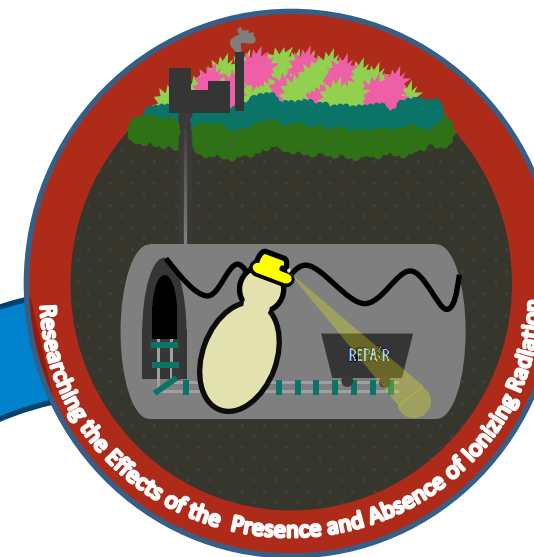
# Experiment Status

## The Yeast Culturing Experiment

Two yeast strains:

- Normal wild type
- Radiation-sensitive rad51KO

Validating results from L. Satta et al. (1995) with modern assays and greater background reduction



Low environmental radiation background impairs biological defence of the yeast *Saccharomyces cerevisiae* to chemical radiomimetic agents

L. Satta <sup>a,b,\*</sup>, G. Augusti-Tocco <sup>c</sup>, R. Ceccarelli <sup>c</sup>, A. Esposito <sup>b</sup>, M. Fiore <sup>d</sup>, P. Paggi <sup>c</sup>, I. Poggesi <sup>d</sup>, R. Ricordy <sup>d</sup>, G. Scarsella <sup>c</sup>, E. Cundari <sup>d</sup>

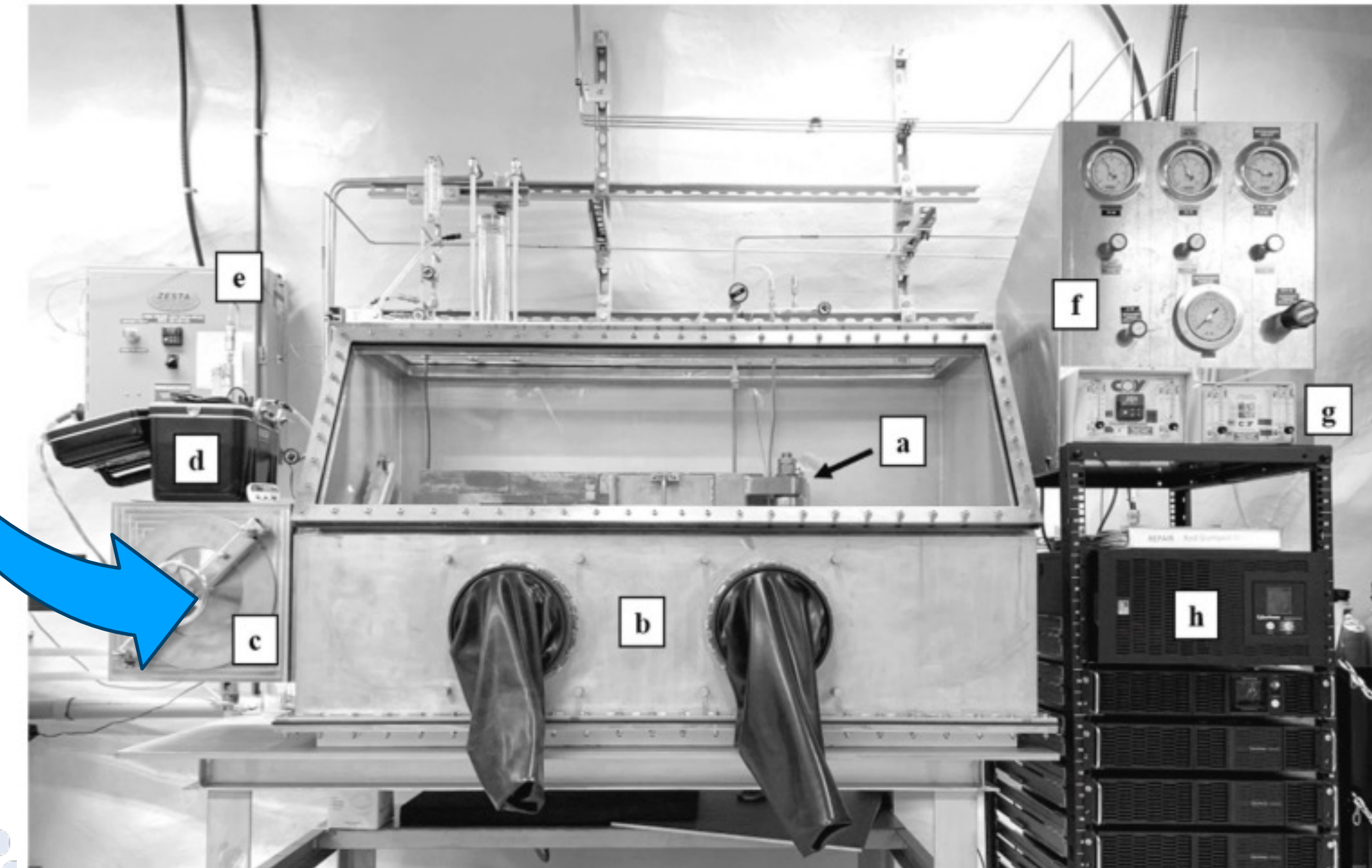
<sup>a</sup> Dipartimento di Energetica, Università 'La Sapienza', Via A. Scarpa 14, 00161 Rome, Italy

<sup>b</sup> INFN Laboratori Nazionali di Frascati, 00050 Frascati, Italy

<sup>c</sup> Dipartimento di Biologia Cellulare e dello Sviluppo, Università 'La Sapienza', Piazzale A. Moro 5, 00185 Rome, Italy

<sup>d</sup> Centro di Genetica Evoluzionistica CNR, Via degli Apuli 4, Rome, Italy

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# Schedule impacts & milestones

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- August 7 - 9: Yeast pilot experiment setup
- August 12 – 30: Yeast pilot experiment run
- September – December: CGL1 experimental run with novel assay for neoplastic transformation

# Challenges

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1. Commissioning STCI for yeast work: risk of contamination, balancing gases  
Recommissioning for cell work, same risks
2. Parental leave, training new students
3. Smooth operation (shutdowns, equipment failures)



# Conclusion – any other pertinent business

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1. Many new lab members
2. Novel yeast experiment in late summer
3. Novel cells biology experiment in fall
4. FLAME Update: low 40K yeast – fed flies