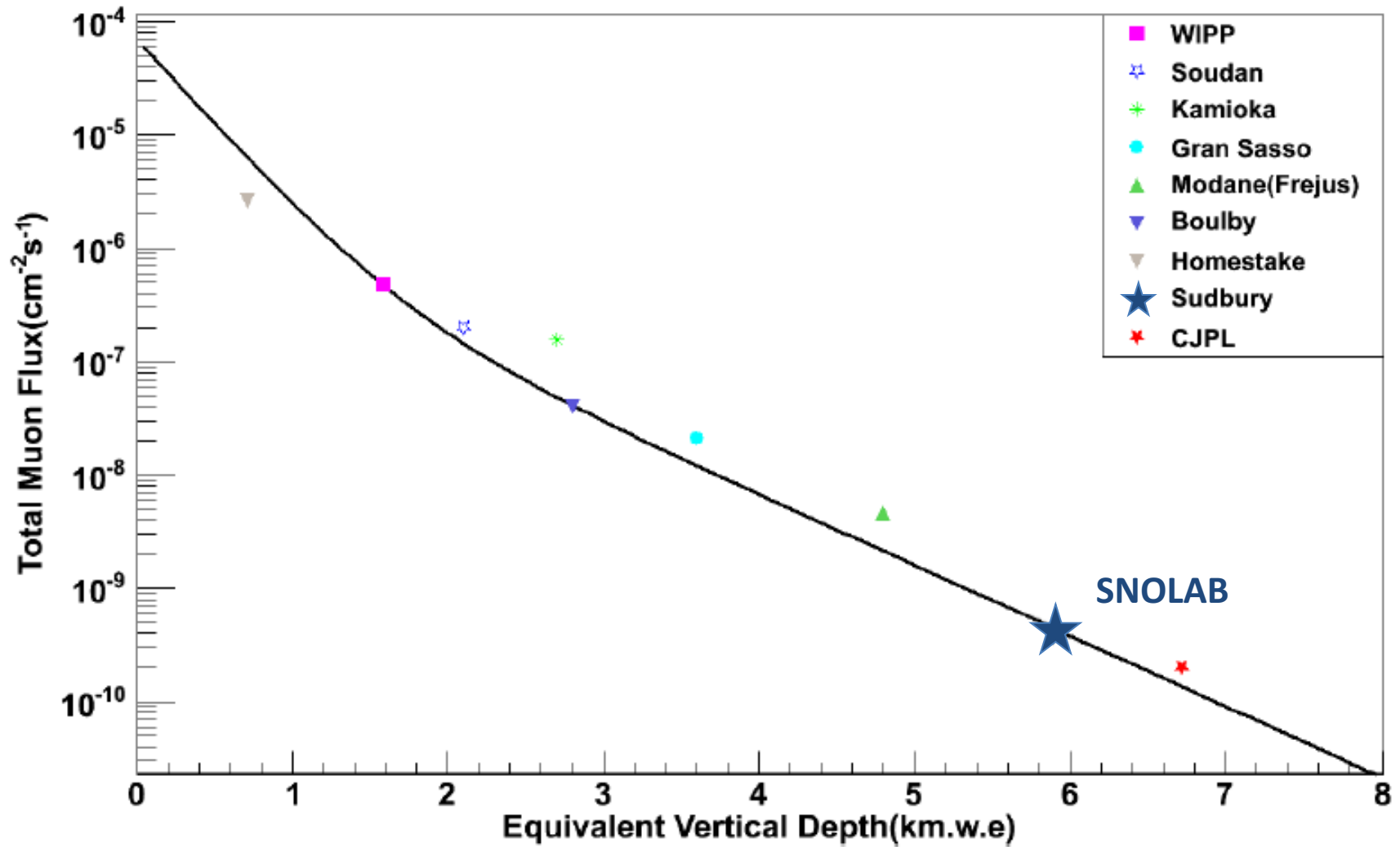




# Updates from SNOLAB

Erica Caden  
Research Scientist,  
SNOLAB

# Why Go Deep?



Wu et al arXiv:1305.0899

# SNOLAB Facility



Surface:  
436 m<sup>2</sup> Clean Rooms  
Machine Shop  
Chemistry Lab  
Office Space

Underground:  
37,000 m<sup>3</sup> volume  
5000 m<sup>2</sup> Class 2000  
0.27μ/m<sup>2</sup>/day

2km Overburden  
Creighton #9 shaft



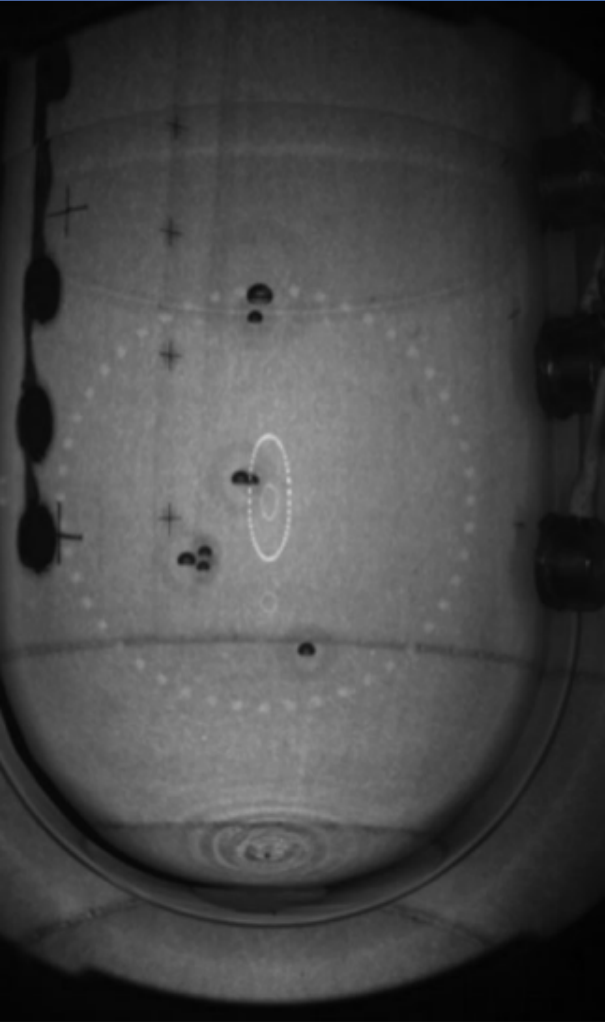
# Current Science Program



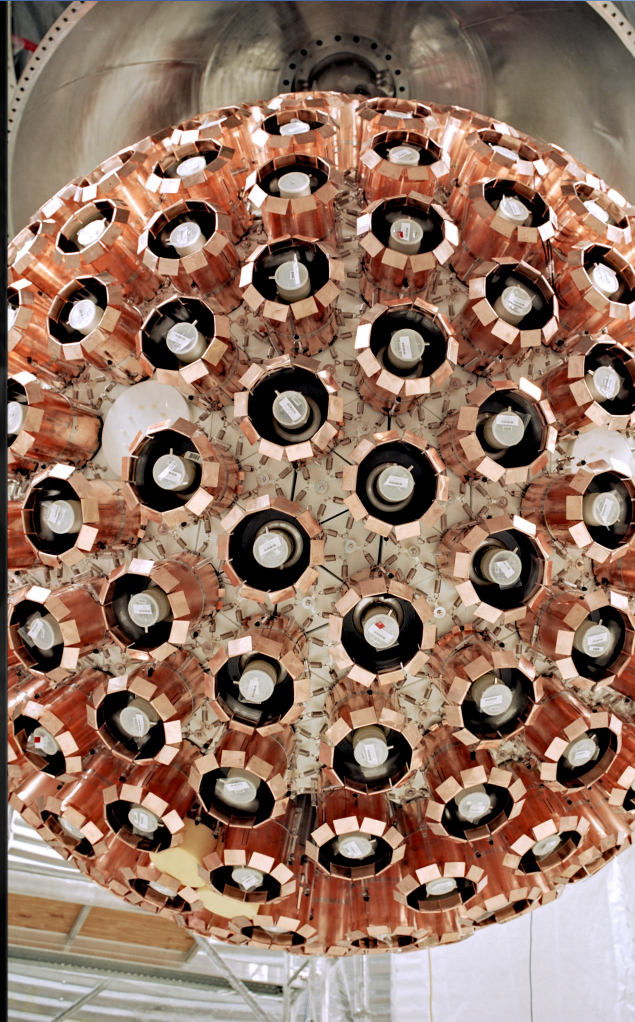
Experiment	Topic	Status	Collaboration Demographics
CUTE	Test Facility	In Preparation	Canada, US, UK, France, India, Spain
DAMIC	Dark Matter	Operational	Canada, US, Argentina, Brazil, Mexico, Paraguay, Switzerland
DEAP-3600	Dark Matter	Operational	Canada, US, UK
DEAP-50T/CLEAN	Dark Matter	Letter of Intent	Canada, US, UK
DMTPC	Dark Matter	Concept Phase	US, UK
DUST	Test Facility	Letter of Intent	Canada
FLAME	Genomics	Operational	Canada
LEGEND (Ge-1T)	Neutrino	Letter of Intent	Canada, US
nEXO	Neutrino	Concept Phase	Canada, US
HALO	Neutrino	Operational	Canada, US, UK, France, Germany, Japan
MiniCLEAN	Dark Matter	Commissioning	Canada, US
MODCC	Mining Data Centre	Operational	Canada
NEWS	Dark Matter	In Preparation	Canada, US, France
PICO-60	Dark Matter	Operational	Canada, US, Czech Republic, India, Mexico
PICO-500	Dark Matter	Letter of Intent	Canada, US, Czech Republic, India, Mexico
REPAIR	Genomics	Operational	Canada
SuperCDMS	Dark Matter	In Preparation	Canada, US, UK, France, India, Spain
SNO+	Neutrino	Operational	Canada, US, UK, Germany, Mexico, Portugal



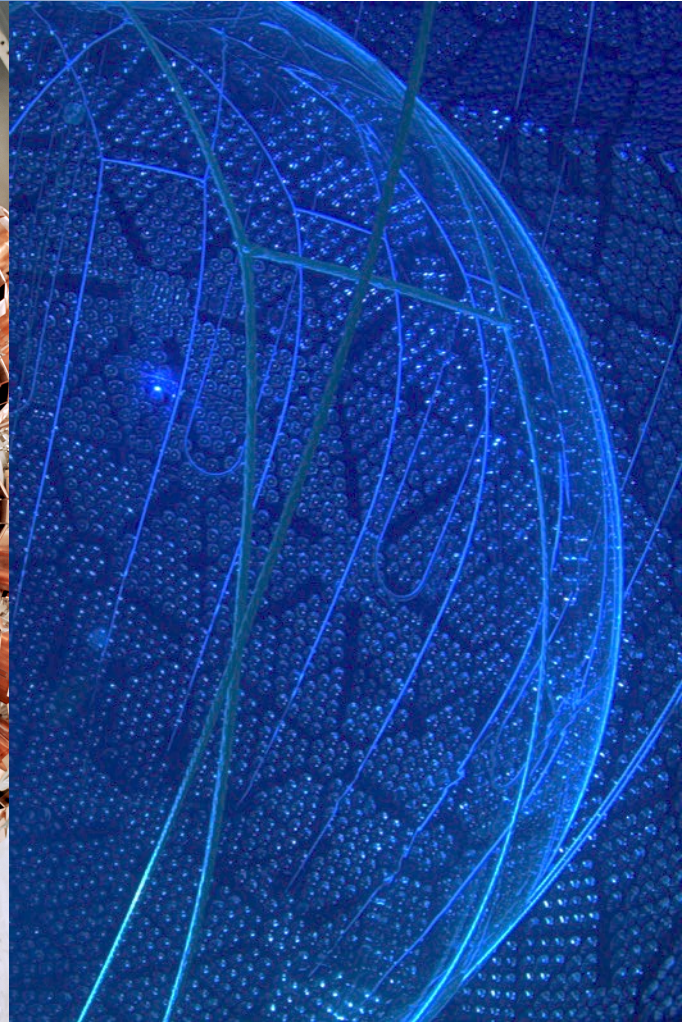
# Current Physics Program



PICO



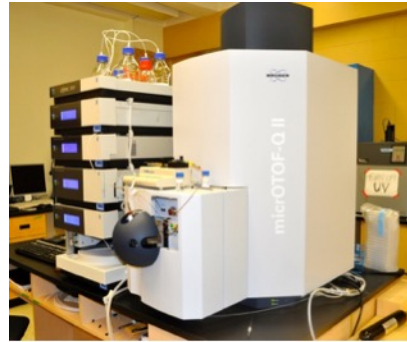
DEAP-3600



SNO+

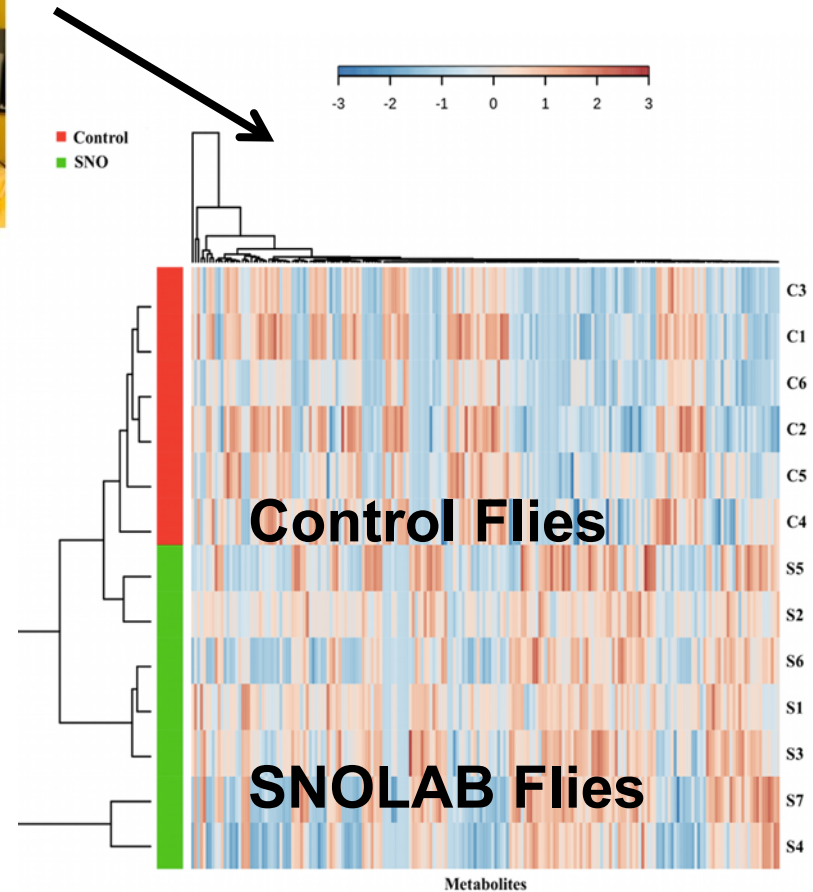
+ DAMIC, HALO, MiniCLEAN, Low Background Counting, SuperCDMS-SNOLAB, NEWS-G

# FLAME: FLies in A MinE



**A single day in SNOLAB leads to changes in 15% of metabolites.**

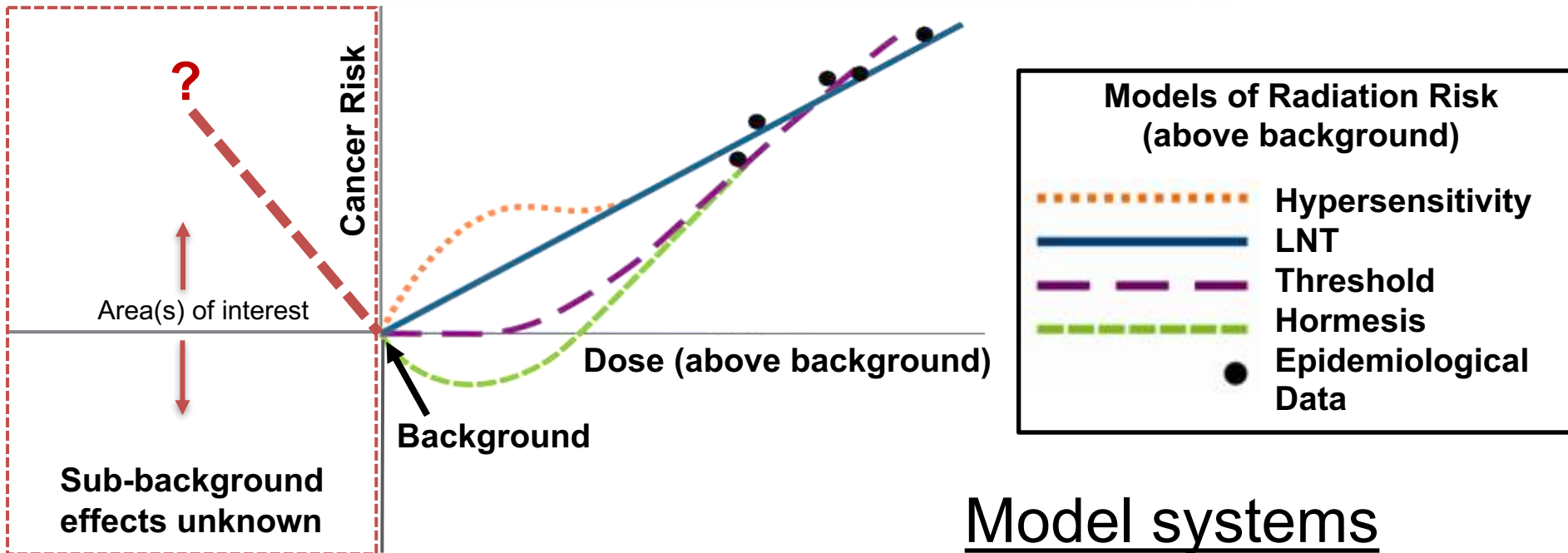
**Study changes through liquid chromatography / mass spectrometry based metabolomics.**





# REPAIR:

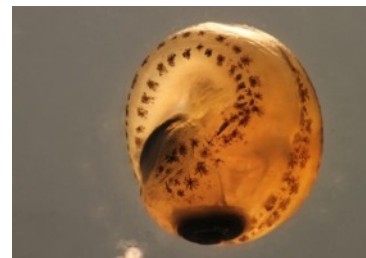
Researching the Effects of the Presence and Absence of Ionizing Radiation



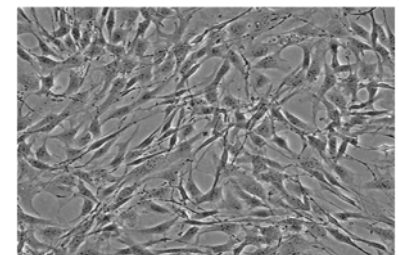
## Model systems

### Hypothesis

- Natural background radiation is essential to life
- Removal of background radiation will be detrimental to biological systems



Embryonic development in lake whitefish

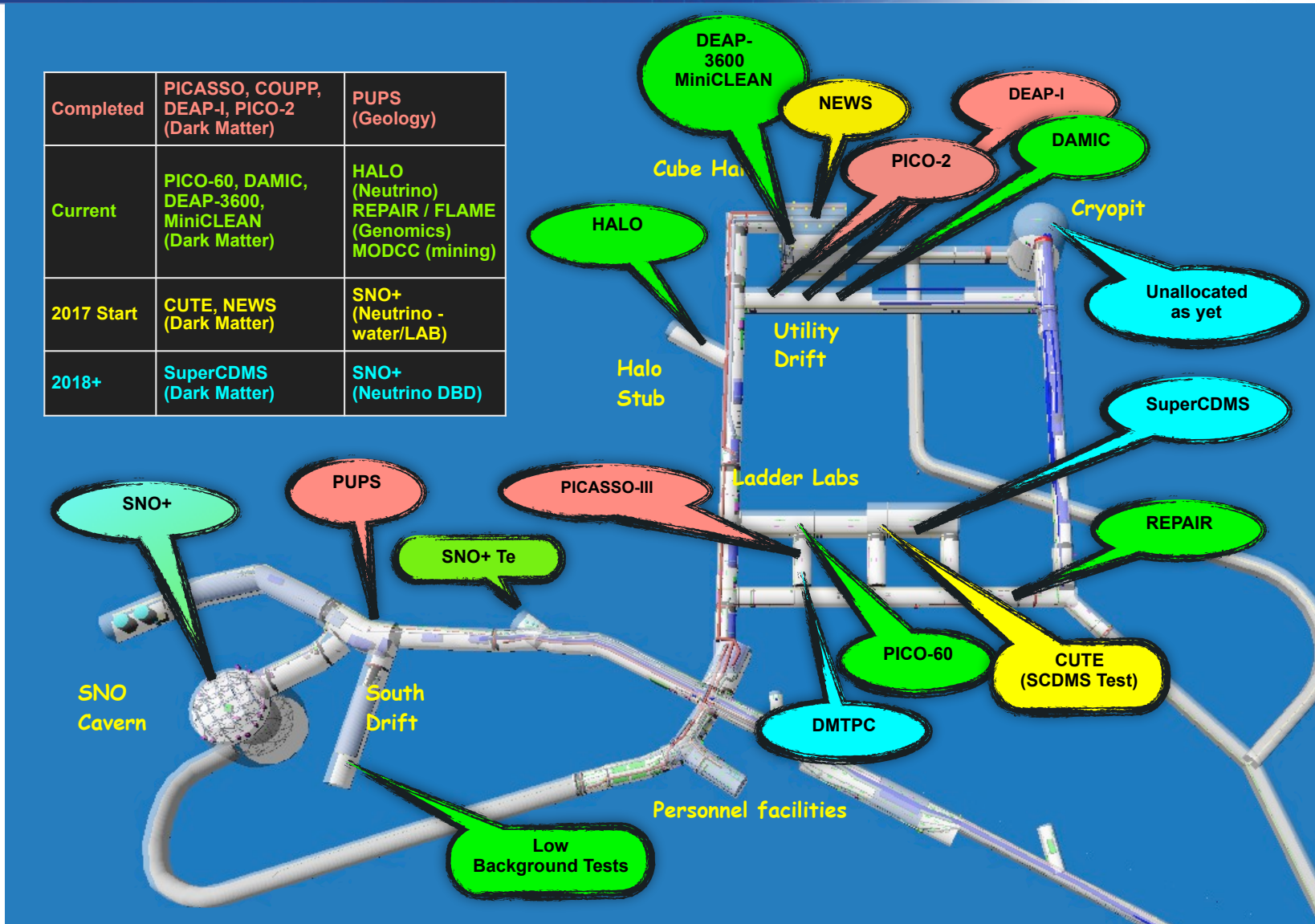


DNA damage and genomic stability in cell culture

# Current SNOLAB Program



Completed	PICASSO, COUPP, DEAP-I, PICO-2 (Dark Matter)	PUPS (Geology)
Current	PICO-60, DAMIC, DEAP-3600, MiniCLEAN (Dark Matter)	HALO (Neutrino) REPAIR / FLAME (Genomics) MODCC (mining)
2017 Start	CUTE, NEWS (Dark Matter)	SNO+ (Neutrino - water/LAB)
2018+	SuperCDMS (Dark Matter)	SNO+ (Neutrino DBD)

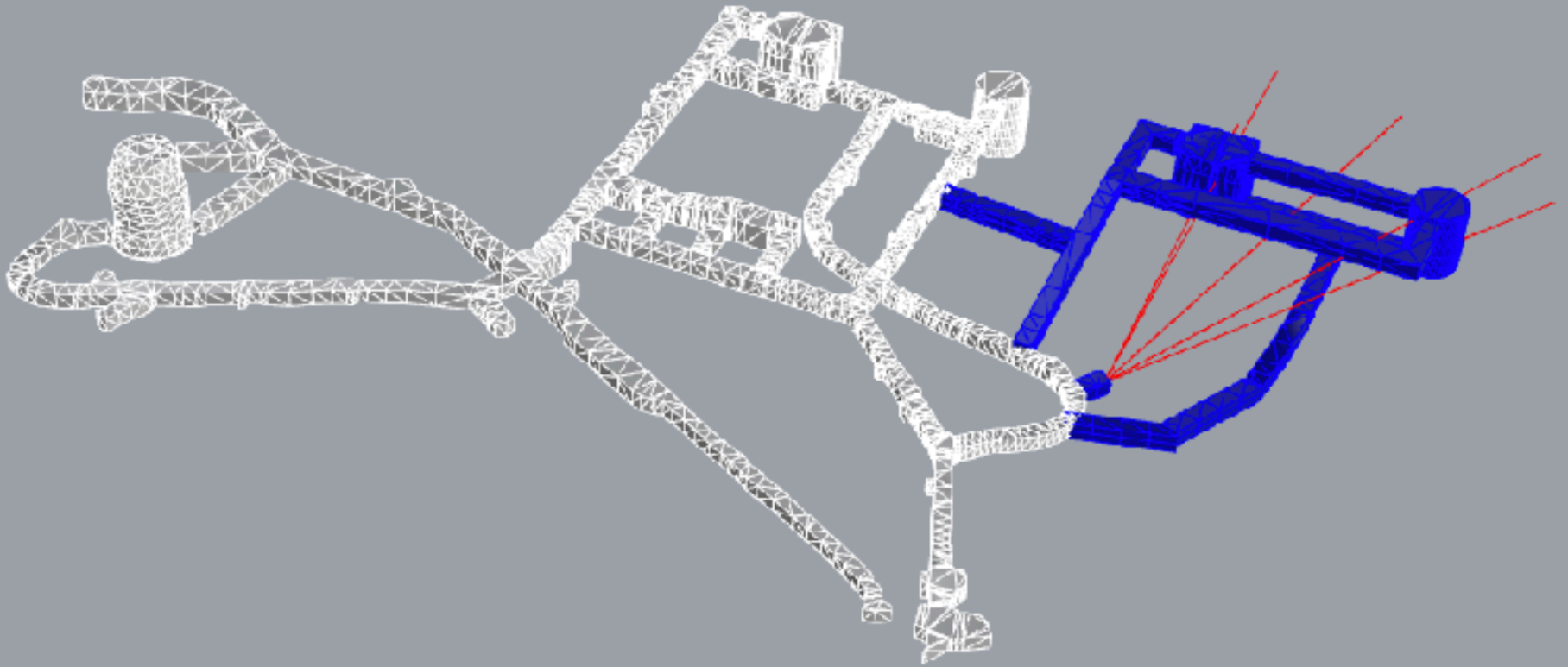


# Lab Development





# Diamond Drilling



# Future Projects Workshop 2017

**August 16th and 17th, 2017 at SNOLAB, Sudbury, Canada**

As part of its medium term planning process, SNOLAB is undertaking a scoping review of potential future small- and medium-scale experiments seeking to locate in the underground campus at 2070 m in the Creighton mine. This Future Projects Planning workshop is part of this horizon scanning exercise, and experimental collaborations that have an interest in using any space underground, including any of the large-scale experimental areas within SNOLAB, over the next five to ten years are invited to present their capabilities, status, plans, and infrastructure requirements.

## **Registration**

If you are interested in attending or presenting at FPW 2017, please register [HERE](#).

## **Schedule**

Schedule and talks will be available on Global Indico - [SNOLAB](#)

## **More Information**

<https://www.snolab.ca/content/2017-future-projects-workshop>

XV International Conference on  
Topics in  
**Astroparticle and  
Underground Physics**



**24 - 28 July 2017**  
**Sudbury, ON, Canada**



PI · SNOLAB · TRIUMF

**TRISEP**

TRI-INSTITUTE SUMMER SCHOOL ON ELEMENTARY PARTICLES

**SUDBURY, ONTARIO**

**JULY 10-21, 2017**

