Campws Arloesi a Menter Aberystwyth
Aberystwyth Innovation and Enterprise Campus

# Be part of a **community** of likeminded innovators

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## Aberystwyth Innovation and Enterprise Campus (AberInnovation)

AberInnovation will provide world leading facilities and expertise for research and development in the biosciences.

Set between the Cambrian Mountains and the Irish Sea, this £40.5m Campus will be a progressive environment to encourage business and academic collaboration to flourish.

AberInnovation will offer a range of high quality facilities to support innovation, enabling commercial enterprises to grow, prosper and drive economic growth in the food and drink, bioprocessing and biorefining, and agri-tech sectors throughout Wales and beyond.

## Planned Facilities

- Future Food Centre
- Biorefining Centre
- Advanced Analysis Centre
- Seed Biobank
- Innovation Hub
- Office Space

# Future Food Centre

**A food grade environment for the testing, validation and improvement of existing and novel materials as foods including nutritional content, advanced compositional analysis, shelf life and consumer preferences.**

## Food Production Lines:

### Food grade processing and laboratories conforming to BRC standards:

- **Meat:** Goods reception with delivery yard, proof of concept scale processing facilities (90m$^2$) and cold storage for meat product raw materials.
- **Dairy and liquids:** Reception (130m$^2$; capacity: 1-500 litre batches), thermal processing and separation of raw milk feedstocks allowing pilot scale pasteurisation, filtration and other treatments in batches (up to 1000 litres) and continuous mode (5000 litres/day). Cheese, cultured milk products, butter and frozen product manufacturing (capacity: 1-100 litre batches) and replicated samples to study a range of novel products simultaneously.
- **Grains and pulses:** Processing and formulation of raw goods, on-site baking including preparation of functional food materials for consumer testing.

## Demonstration Kitchen and Sensory Booths:

- **Demonstration kitchen:** Full audio-visual support within a commercial kitchen will allow for real-time remote viewing in addition to presentation and recording capabilities for novel product development and preparation.
- **Sensory Analysis:** Six booths for trained taste panels, served by a dedicated kitchen and incorporating computerised response system to allow real-time responses to organoleptic and sensory properties of novel foods (taste, texture, appearance, etc.) to be collated.

## Novel and Functional Foods:

- **Foods and Bioprocessing:** The food production lines and processing capability link with the food grade **Downstream Processing** and **Fermentation Units** within the **Biorefining Centre,** allowing food materials to be easily transported between each zone.
- **Foods and health claims:** The **Future Food Centre** will be integrated with the activity of the Aberystwyth University Well-being and Health Assessment Research Unit (WARU) and will be well placed to develop evidence for health claims relating to novel foods.

## Laboratory Analysis: composition, shelf life and safety:

- **Food quality and composition:** Access to excellent facilities in the **Advanced Analysis Centre** to determine food composition using standard and bespoke tests (e.g. essential fatty acids, nutraceuticals, micronutrients, chemical determinants of bioactivity, flavour and colour development).
- **Food characteristics:** a fully equipped laboratory for measuring the physical characteristics of liquid and solid foods (e.g. meat texture).
- **Food storage:** replicated thermal environment modulation cabinets to study a range of temperature and humidity effects on food maturation processes.
- **Retail display cabinets:** to study effects of shelf life and types of packaging on food quality (e.g. colour testing, food stability).
- **Food safety:** a designated microbiology laboratory to test and measure microbial spoilage.

# Biorefining Centre

**A pilot scale facility for extracting, analysing and optimising chemicals from biomass and waste stream materials with integral industrial biotechnology and a food grade environment.**

**Pilot plant:**

- **Primary Processing Unit (PPU) –** Juicing fresh feedstocks (100kg to 1 tonne/hr) and producing pressed material for further processing using bespoke continuous countercurrent extraction and belt drying systems (25-150kg/hr). Ambient stirred digestion of bulk materials in IBCs (250-1000 litres). Milling and densification of dried feedstock for fuel production including production of pellets for trials.
- **Downstream Processing Unit (DSPU) –** Food grade facilities for size fractionation of suspended and dissolved solids using pilot scale MF/UF/NF and Reverse Osmosis cross-flow filtration systems fitted with industrial sized spiral wound, ceramic and tubular membranes. Continuous solid-liquid and liquid-liquid separation capability using decanter, auto desludging disc-stack and separator centrifuges (50 to 2000 litres/hr). Preparation of food-grade quality extracts and concentrates.
- **Spray Drying –** Finished powder products (approx. 7 litres/hr). Steam explosion for pressurised hydrothermal pre-treatment of a range of different feedstocks (batch processing up to 20kg dry biomass per day).
- **Pilot Fermentation Unit (PFU) –** Food grade facilities for conventional fermentative and novel biotech products at an industrially relevant scale. Fermentation in 1 litre, 10 litre, 30 litre, 70 litre and 300 litre bioreactors. Automated methane potential systems for assessing biogas potential of feedstock. Design of experiment (DoE) guided bioprocesses, capable of scale-up.
- **Clean Room** (including Product Finishing Area) – An ISO 7 level (high hygiene) area for finishing (purifying/crystallising/drying) and bagging small scale products (mg to kg) in a controlled atmosphere environment.

**Industrial biotechnology suites:**

- **The Industrial Biotechnology Acceleration Suite (IBAS) –** State-of-the-art microbial phenotyping and fermentation platforms for both aerobic and anaerobic microbiological applications. Phenotypic microarrays to identify novel microbes and characterise the metabolism of new production strains developed using synthetic biology approaches. Exploration of **Synthetic Biology** development routes and full analytical support.
- **Bio-Prospecting Suite (BPS) –** Extraction of samples at a range of scales (mg to kg). Laboratory scale fractionation (mg to kg) of semi-purified natural products and liquors. Accelerated solvent extraction for rapid extraction of natural product components and solvent evaporators for concentration and subsequent purification of natural products. High performance counter current chromatography system for rapid liquid-liquid separations.
- **Low Carbon Laboratory –** Eighteen LED-based illumination controlled growth chambers for controlled environment study such as modification of chemical composition.

**Compositional Analysis facilities:**

- Access to excellent facilities in the **Advanced Analysis Centre** for compositional testing at all stages of biorefining, bioprocessing and fermentation activities.

# Advanced Analysis Centre

**Bespoke facilities supporting analytical needs and interacting with the Aberystwyth University Well-being and Health Assessment Research Unit (WARU) for food intervention studies.**

**Advanced compositional testing in bioprospecting, biorefining and fermentation process support:**

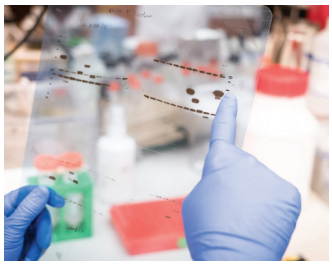
- **Chemical content analysis –** Including minerals, sugars, organic acids, alcohols, lipids, lipid oxidation status, pro-oxidative and anti-oxidative capacities.
- **Comprehensive profiling and structural elucidation –** Analysis of metabolites in bio-extracts using ultra high-resolution LC and GC mass spectrometry.
- **Triple Quadrupole mass spectrometry –** Targeted quantification of secondary metabolites in complex mixtures.
- **UPLC and GC –** Analysis and quantification of sugars, organic acids and alcohols.

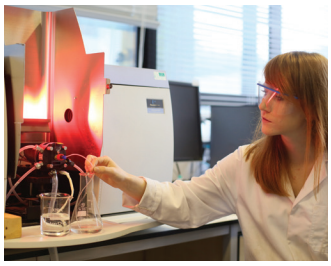
**Food quality and composition:**

- **Analytical capability to determine food composition –** Standard and bespoke tests (e.g. vitamins, essential fatty acids, nutraceuticals, micronutrients, chemical determinants of flavour and colour development) for process quality control on dedicated instruments.
- **Food bioactives discovery and validation –** Comprehensive profiling of foods for discovery and validation of (lipidomics and metabolomics) dietary exposure biomarkers and bioactive functional compounds.
- **Comprehensive lipid and fatty acid profiling –** Dedicated laboratory for analysis of fat-soluble components, lipid fractions, fatty oxidation products and vitamins.

**Food functionality and health claims:**

- **UHPLC and GC Laboratories –** Targeted analysis supporting bioactive metabolite quantification in agricultural raw materials, biorefined materials and foods.
- **Dietary exposure biomarker analysis –** Triple Quadrupole analysis area for targeted, quantitative analyses of urine and blood samples to assess compliance in food intervention studies and to measure biomarkers of overall eating behaviour in clinical trials with novel foods.
- **Bioavailability and metabolism assessment –** Determining the metabolic fate of food bioactives/ nutraceuticals in clinical trial participants.
- **Nutritional status assessment –** Clinical biochemistry analytics supporting nutritional status assessment.





## Seed Biobank

**A controlled environment facility for the secure storage and cataloguing of plant genetic resources.**

- **The Biobank –** A fully documented plant genetic resource available to the plant breeding community. It is integral to the UK Plant Genetic Resources Group (UKPGR) collections, held at centres throughout the UK, and the European Cooperative Programme for Plant Genetic Resources (ECPGR). We specialise in curating accessions of temperate grass and legume species held in medium and long term (20 years) storage under controlled environmental conditions.
- **Crop seed processing –** Bulk store (10°C and 20% relative humidity – capable of holding over 150 pallets of seed) for large pre-commercial seed samples and a separate sample store for dried and milled plant samples. It includes a laboratory and seed processing area. Seed samples of a range of sizes can be prepared (capable of handling lots from a few grams to 10 tonnes), cleaned from weeds and other contaminants to high standards of purity and germination in line with the International Seed Testing Association (ISTA).

## Other Initiatives

Other initiatives co-located with Aberystwyth Innovation and Enterprise Campus

BEACON
From plants to products
O blanhigion i gynhyrchion

**BEACON Biorefining Centre of Excellence**
www.beaconwales.org

National Plant Phenomics Centre

**National Plant Phenomics Centre**
www.plant-phenomics.ac.uk

Uned Ymchwil Asesiant Lles a Iechyd
Well-being and Health Assessment Research Unit

**Well-being and health Assessment Research Unit**
www.waru.org.uk

FutureFoods
Collaborate to Succeed | Cydweithio i Lwyddo

**Future Foods Wales**
www.futurefoods.wales

BioArloesedd Cymru
BioInnovation Wales

**BioInnovation Wales**
www.bioinnovationwales.org.uk

CIEL

**Small Ruminant Research Platform**
www.cielivestock.co.uk


# Be part of our community of likeminded innovators

Innovation Hub

## Innovation Hub

### Meeting and Event spaces

A welcoming social space for both formal and informal events to help spark chance discussions, encourage creative thinking and problem solving, in a collaborative community with flexible working spaces and bookable meeting rooms for likeminded innovators.

## Office Space

### The Innovation Campus Office Building

The home of our new **business community** – **come and join us** – available now!

The Aberystwyth Innovation and Enterprise Campus Office Building contains 17 rentable offices varying in size from 8m$^2$ to 23m$^2$. Our fully serviced offices hold between 1 and 4 persons and every office is light and bright with open views.

These highly finished professional spaces are for entrepreneurs and businesses to grow and thrive.

Our Office Building has ample parking, high-speed WiFi and meeting rooms of its own. Offices are available for short leases on a full time and part time basis.

## Office Space
Membership
Packages availaible

## Membership Packages at-a-glance

| | Resident Tenants (priced m² per month) | Associate Tenants (£90 per month) | Virtual Tenants (£50 per month) |
|---|---|---|---|
| A light spacious and newly renovated, professional private office | ● | | |
| A designated desk when working on or visiting campus | | ● | |
| Full time presence in a community of businesses and scientists | ● | | |
| Cleaning and maintenence services, recycling and refuse facilities | ● | ● | |
| Professional work environment amongst likeminded businesses | ● | ● | |
| Your company advertised on the AberInnovation website | ● | ● | ● |
| A trading address | ● | ● | ● |
| Access to events on campus | ● | ● | ● |
| A place to host meetings with colleagues and collaborators | ● | ● | ● |
| Start work immediately | ● | ● | ● |

## Resident Member

A fully furnished office with telephone landline and 24/7 electronic access to the office building with unlimited working hours. Each Resident Member will have a lockable private offce with heating, electricity, sensored lighting, security and secure high-speed internet and Wi-Fi.

Resident Members will also have free access to high quality meeting room facilities, break-out spaces including a shared kitchen area and on site café, and a dedicated car parking space.

**Benefits:**

- A light, spacious and newly renovated, professional private office
- Full time presence in a community of businesses and scientists
- Co-location with AberInnovation Team
- Move straight in and start to work immediately
- Access to events on Campus
- Your company advertised on the 'Residents' area of the AberInnovation website
- Cleaning and maintenance included
- Refuse and recycling facilities

## Associate Member

A fully furnished, shared office space with 40 hours' electronic access to the office building per month during working hours with heating, electricity, censored lighting, security and secure high-speed internet and Wi-Fi. Associate members will also have 4 hours of free access to high quality meeting room facilities, break-out spaces including a shared kitchen area and on site café and a dedicated car parking space.

**Benefits:**

- A designated desk when working on or visiting the Campus
- Co-location with AberInnovation Team
- Move straight in and start to work immediately
- Access to events on Campus
- A trading address and professional work environment
- Your company advertised on the AberInnovation website
- Cleaning and maintenance included
- Refuse and recycling facilities

## Virtual Member

Access to AberInnovation's network and online community as well as meeting rooms when visiting campus and a trading address with secure postal storage.

**Benefits:**

- A trading address and secure postal mail storage
- Your company advertised on the 'Virtual Members' area of the AberInnovation website
- Access to Meeting Rooms – facilities charged at 50% discount on standard rates – bookable, subject to availability

## Meet the AberInnovation team

**Dr Rhian Hayward MBE**
Chief Executive Officer

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**Ben Jones**
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**Phil Ellis**
Equipment and Services Manager

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01970 628498

**Clodagh Metcalfe**
Operations Assistant

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## **Office accommodation** available today for start-up and scale-up companies

**Contact us:** AberInnovation Offices, Gogerddan, Penrhyncoch, Aberystwyth, Ceredigion, SY23 3EE

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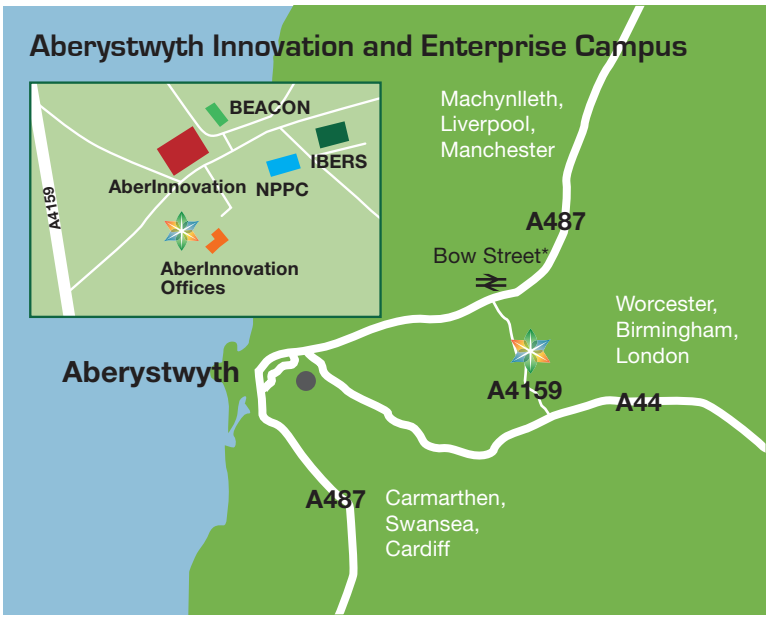
@aberinnovation

Aberystwyth Innovation and Enterprise Campus Ltd.

- AberInnovation Offices
- Aberystwyth Innovation and Enterprise Campus (AberInnovation)
- Institute of Biological, Environmental & Rural Sciences (IBERS)
- The BEACON Biorefining Centre of Excellence (BEACON)
- The National Plant Phenomics Centre (NPPC)
- Aberystwyth University Penglais campus
- Bow Street train station to Birmingham, Birmingham International and London Euston (opening May 2020)

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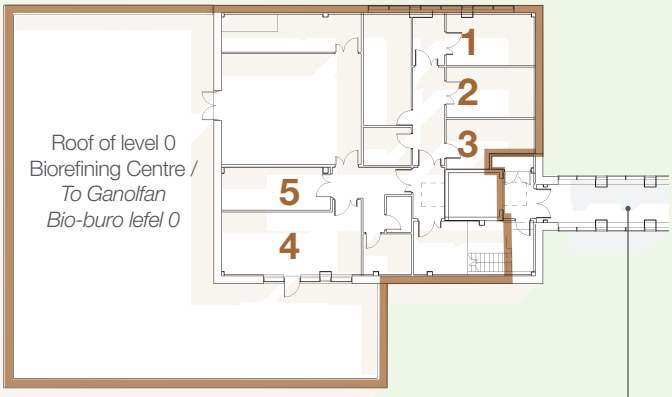
# Floor Plans & Capabilities / Cynlluniau Llawr a Galluoedd

**LEVEL / *LEFEL 1***

**Biorefining Centre**
**Canolfan Bio-buro**

1 Clean Room / *Ystafell Glân*
2 Chemical Store / *Storfa Gemegol*
3 Data Processing / *Prosesu Data*
4 Low Carbon / *Carbon Isel*
5 Freeze Dryers / *Sychwr Rhewi*

**LEVEL / *LEFEL 1***



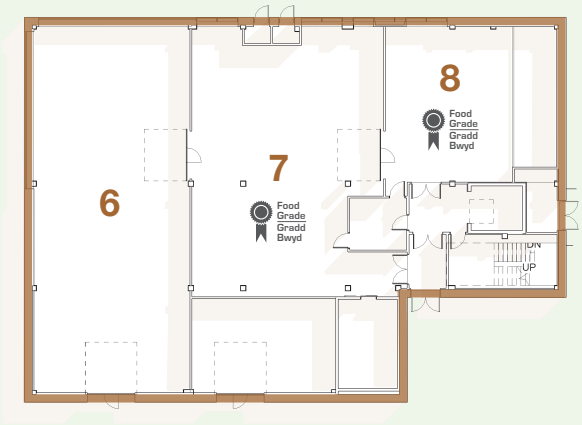

Link corridor to the Future Food Centre and Innovation Hub / *Coridor cyswllt i'r Ganolfan Bwydydd y Dyfodol a'r Parth Arloesi*

**LEVEL / *LEFEL 0***

**Biorefining Centre**
**Canolfan Bio-buro**

6 Primary Processing / *Prosesu Sylfaenol*
7 Downstream Processing / *Prosesu Eilaidd*
8 Fermentation / *Eplesu*

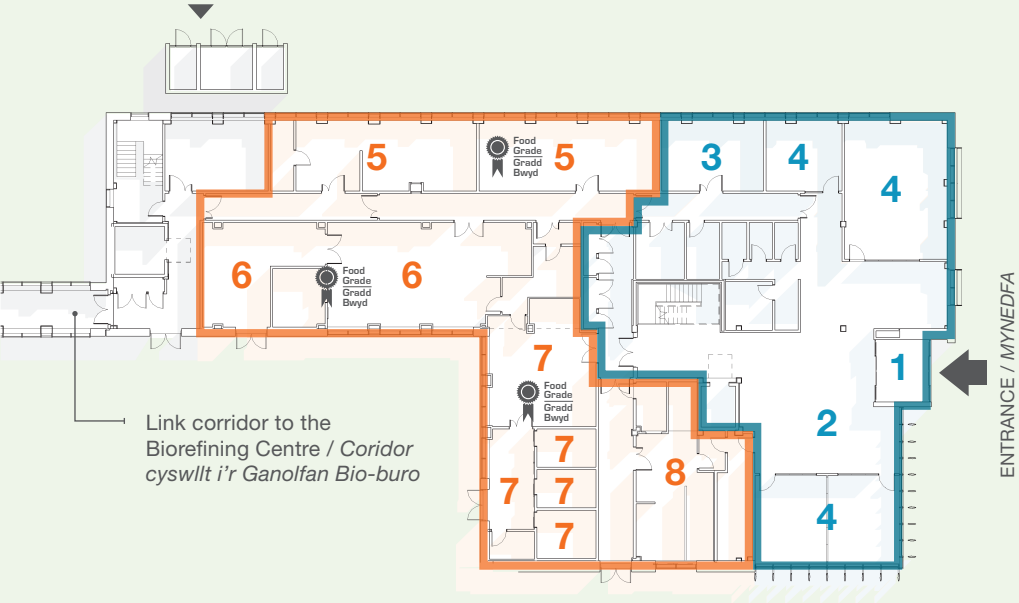
**LEVEL / *LEFEL 0***




**Seed Biobank**
**Biofanc Hadau**

9 Seed Preparation / *Paratoi Hadau*
10 Bulk Seed Store / *Storfa Hadau Swmp*
11 Biobank / *Biofanc*

LEVEL / *LEFEL 1*




LEVEL / *LEFEL 2*


LEVEL / *LEFEL 1*

**Innovation Hub**
**Parth Arloesi**

1 Entrance / *Mynedfa*
2 Reception / *Derbynfa*
3 Tenant Laboratory / *Labordy Tenantiaid*
4 Offices / Meeting Rooms / *Swyddfeydd / Ystafelloedd Cyfarfod*

**Future Food Centre**
**Bwydydd y Dyfodol**

5 Food Testing / *Profion Bwyd*
6 Dairy Processing / *Prosesu Llaeth*
7 Meat Processing / *Prosesu Cig*
8 Food Preparation & Sensory Testing / *Paratoi Bwyd a Phrofi Synhwyraidd*

LEVEL / *LEFEL 2*

**Innovation Hub**
**Canolbwynt y Campws**

9 Offices / Meeting Rooms / *Swyddfeydd / Ystafelloedd Cyfarfod*

**Advanced Analysis Centre**
**Canolfan Ddadansoddi Uwch**

10 Principal Analytical Laboratory / *Prif Labordy Dadansoddol*
11 Synthetic Biology and Bioprospecting / *Bioleg Synthetig a Bio-chwilota*
12 Microbiology / *Microbioleg*

**Food Grade**
**Gradd Bwyd**

Food grade environment conforming to BRC standards.
Amgylchedd gradd bwyd yn cydymffurfio â safonau Consortiwm Manwerthu Prydain (BRC).