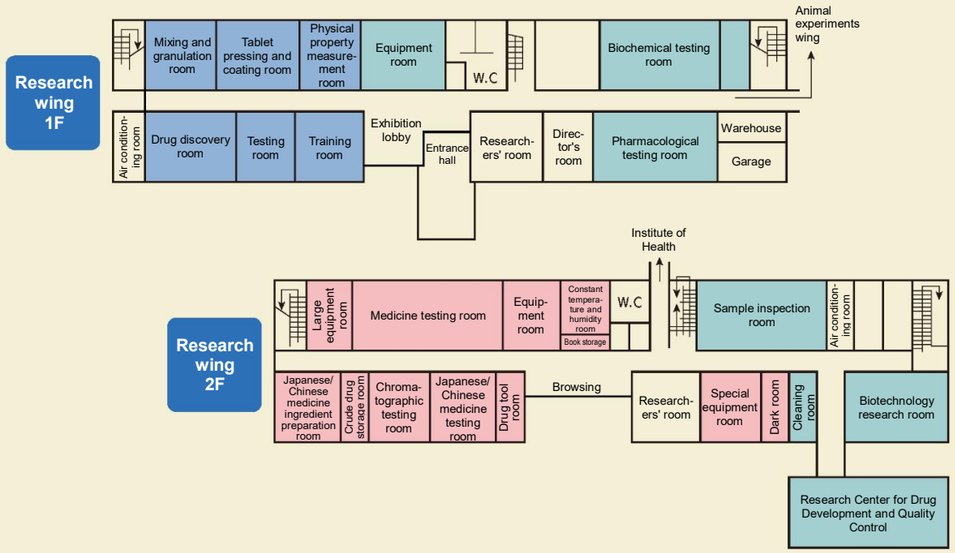
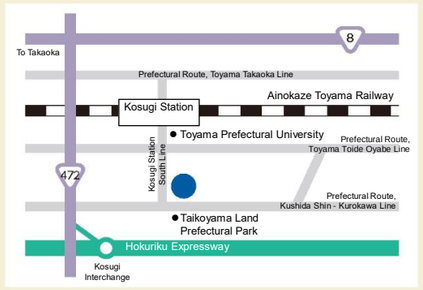
Plane figure



Access



On foot:
About 30 minutes from Kosugi Station South Exit

Public transportation
(the "Kosugi Station - Taikoyama Line" Imizu Community Bus):
Get on at "Kosugi Station South Exit" and get off at "Environmental Science Research Center (Kankyo Kagaku Center Mae)" (a bus ride of about 6 minutes)

By car:
About 5 minutes from Kosugi Station South Exit
About 30 minutes from JR Toyama Station South Exit (Main Exit), about 20 minutes from JR Shin-Takaoka Station, about 30 minutes from Toyama Airport
About 7 minutes from the Hokuriku Expressway Toyama-nishi Interchange
About 7 minutes from the Hokuriku Expressway Kosugi Interchange

Toyama Prefectural Institute for Pharmaceutical Research

Center for Innovation in Pharmaceutical Development and Drug Delivery

17-1 Nakataikoyama, Imizu, Toyama 939-0363 TEL 0766-56-6026 FAX 0766-56-7285
HP: http://www.pref.toyama.jp/branches/1285/

2018. 6

Toyama Prefectural Institute for Pharmaceutical Research

Center for Innovation in Pharmaceutical Development and Drug Delivery

Center for Innovation in Pharmaceutical Development and Drug Delivery

—Reinforcement of base function of support for pharmaceutical development and research and research of medicinal study—

Mixing and granulation room

Machines are placed in zones depending on the process they are used for

Physical property measurement room

The latest equipment for measuring physical properties is available, including a taste recognition device

Equipment room

Both manual type and automatic elution test device are placed.

Tablet pressing and coating room

Partitions are movable, and can be removed to form a large laboratory, ideal for training students or giving demonstrations of machinery

Testing room

The multipurpose laboratories can be used by pharmaceutical companies or used for training students

Drug discovery room

Equipment for research such as confocal laser microscope are placed.
Weighing room and dark room are also newly prepared.

Training room

There is a large screen for giving lectures to students or seminars

Japanese/Chinese medicine testing room

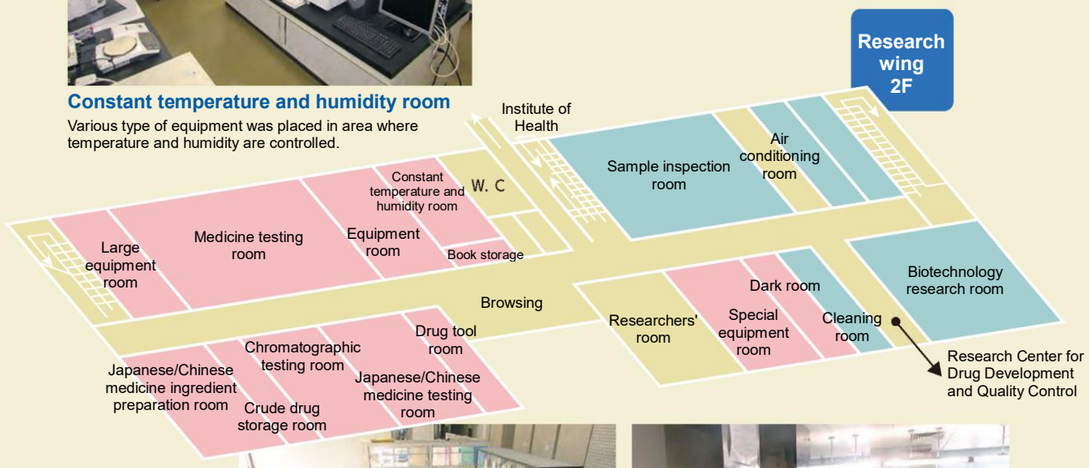
Laboratory table for work and draft chamber are placed.

Equipment room

Various type of liquid chromatography including ultra-high performance liquid chromatography is available.

Constant temperature and humidity room

Various type of equipment was placed in area where temperature and humidity are controlled.



Browsing

Technical books and academic magazines are available for browsing

Special equipment room

Atomic absorption spectrophotometer and various type of gas chromatography are placed.

Utilized for training for university students and high school students.

Production equipment (granulation device and grain size controller)

Can handle the entire tablet or granule manufacturing process, following the manufacturing stages for sold formulations

Major stages in manufacturing tablets

Mixing and granulation ▶ Granule processing ▶ Pressing ▶ Film coating ▶ PTP packaging

Fluid bed granulator

This device uses a hot air flow to send granules downwards, then sprays them with binder solution to granulate them. This produces light and highly porous granules which are suitable for tablet pressing.
[Model: FL-LABO Freund Corporation]

Complex type fluidized-bed granulator

This device uses a hot air flow to send raw material powder upwards and processing of granule applicable for various usage is possible by replacement of milling blade and granulation container. Coating with micro particle is possible.
[Model: FD-MP-01D Powrex Corporation]

Dry granulator

This device forms flakes of raw materials by compressing raw material powder with two rolls, and pulverizes and processes them to form granules with exclusive granulator.

As it does not use water, it can be used for bulk drugs that are unstable in water.
[Model: Roller compactor Freund Corporation]

High shear mixer

This device makes granules by rotating stirring blades on the floor of the container and milling blades on the sides at high speed.
As it produces heavy spherical granules, it is suited to the manufacture of granulated drugs.

[Model: High speed mixer 5 EARTHTECHNICA CO. LTD.]

Extrusion granulator (Basket type)

This device kneads binding agent together with the raw material powder then forces the resulting mixture, through a screen by extrusion to form granules. As well as manufacturing granules, it can also be used together with a spheronizer (Marumerizer) to make spherical granules.
[Model: HU-G HATA TEKKOSHO CO., LTD.]

Extrusion granulator (Screw type)

This device kneads binding agent together with the raw material powder then forces the resulting mixture, through a screen by extrusion to form granules.
Both axial extrusion (dome shape and plane) and radial extrusion is available.
[Model: Multigran MG-55 DALTON CORPORATION]

Granule shaper

This device presses the raw material onto a conical screen using spinning impeller blades to shape granules. It is mainly suited to shaping the large, coarse granules produced by stirring granulation methods, and can be used for both wet and dry granulation.
[Model: Tc-Lab EARTHTECHNICA CO. LTD.]

Vibrating filter

This device generates horizontal and vertical motion by motor and vibrating body and screens raw material on sieve surface (net). Adaptive to sieve with 300 mm in diameter.
[Model: 300-MM
TSUTSUI SCIENTIFIC INSTRUMENTS CO., LTD.]

Production equipment and property measuring device

Can measure the physical properties of powders, granules and tablets

Rotary tablet press

This device has 12 mortars and pestles attached to a turntable, and each time the turntable rotates, the drug substance is packed, compressed, decompressed and expelled in a continuous process, to form tablets. It can manufacture up to 20,000 tablets per hour.
[Model: VELAS KIKUSUI SEISAKUSHO LTD.]

Multi-tip tools

Molding die for tablet press required for tableting of mini tablet with a diameter from 1 mm to 4 mm. Shape of the tip divides into several parts compared with regular punch, several prototypes of tablets can be produced in one batch.
Structure of the tip is exchangeable.
[Model: diameter 1.5, 2, 3, 4 mm Pharmachine]

Tablet film coating device

This device film-coats tablets by sending them into a pan with a circular cross-section and drying them while spraying them with coating fluid.
Using a combination of a low-pressure aeration drying structure and a quantitative spraying system, it can coat tablets evenly in a short time.
[Model: HC-LABO Freund Corporation]

Semi-automatic PTP packaging device

Device used for packaging of tablets, etc. separately one by one with thin metal such as aluminum and plastic sheet. It is usable for packaging test and stability test.
[[Model: K-200KS-DK
Daiwa Kasei Industry Co., Ltd.]

Multifunctional powder property measuring device

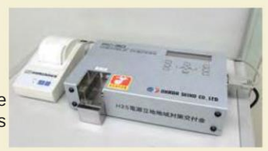
This device can measure many physical properties of powders, including bulk, density (loose/hard), angle of repose and degree of agglomeration. It can be used to assess the physical properties of raw materials and granules.
[Model: Multi tester (MT-1001) SEISHIN ENTERPRISE CO., LTD.]

Oral disintegrating tablet testing device

This is a testing device for assessing the disintegration of oral disintegrating tablets. A tablet is placed on a highly porous board, and when measurement starts, a rotating weight descends, and when it touches the tablet, the water level in the container is adjusted, and warm water is supplied through the porous board.
The time when the tablet disintegrates and the weight touches the porous board is detected, and the disintegration time is automatically measured.
[Model: ODT-101 TOYAMA SANGYO CO., LTD.]

Tablet hardness tester

This testing device automatically measures the hardness of pressed tablets. It can measure the hardness of tablets with diameters of 3 to 15 mm up to 300 N and print out the results.
[Model: Portable checker PC-30 OKADA SEIKO CO., LTD.]



Moisture meter

This is a heat drying moisture meter which automatically measures the water content of granules or tablets. The measured water content is shown, down to a minimum level of 0.01%.
[Model: MX-50 A&D Company, Limited]

Equipment for Pharmaceutical Research

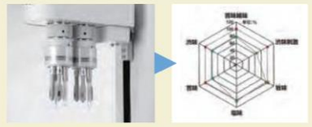
Taste recognition device (taste sensor)

Can quantify bitterness and assess masking effects

Overview of device
This device uses sensors to assign numerical values to the taste of substances such as drugs to analyze them.

Purpose
It allows objective assessment of how effectively bitter drugs are masked. It can express tastes (such as bitterness, sweetness and sourness) as numerical values.

Specification
Model: TS-5000Z (Intelligent Sensor Technology, Inc.)
Items measured: Bitterness (foretaste/aftertaste), sourness, sweetness



Various sensors detect tastes

Tastes are expressed as numerical values

Laser diffraction particle size analyzer

Can make both dry and wet measurements of particle size distribution, for sizes from nanometers to millimeters

Overview of device
This device measures and analyzes the particle sizes of powders (raw materials for drugs) or granules.

Purpose
It can measure particle size distributions and mean particle sizes of raw materials or granules, and assess their physical properties.

Specification
Model: SALD2300 (Shimadzu Corporation)
Measurement method: Full wet/dry measurement system
Measurement range: 17 nm to 2.5 mm

Displays particle size distributions and light intensities in real time

Vacuum freeze dryer

Laboratory scale freeze drying is available with automatic tight plugging function

Overview of device Since the device can dry material in low temperature without applying heat, dried material is available avoiding damage of component or tissue.

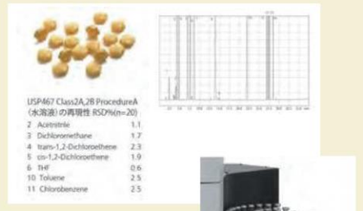
Purpose Preparation of extract of natural products, pilot manufacturing of specialized tablet with high porosity and freeze drying of injectable preparation (antibiotic drug or peptide formulation)

Specification
Model: FZ-18/STD type (ASAHI LIFE SCIENCE CO., LTD.)
Trap capacity: 18L
Rack temperature: preliminary freezable, program settable, with sample temperature sensor
Other: Automatically tightly plugging and connectable to flask

Analysis equipment

Gas chromatograph with automatic headspace sampler

Can measure the amounts of residual solvents in medicines



Measures the amounts of residual solvents in medicines

Has space for 90 samples

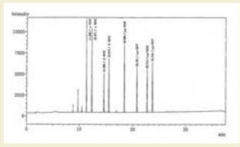
Overview of device This device analyzes vaporized volatile compounds using a gas chromatograph.

Purpose It can analyze the volatile ingredients of medicines and bulk drugs, for the purpose of pharmaceutical development and quality control.

Specification Headspace analysis system (gas chromatograph with headspace sampler and FID), Model: HS-20、GC-2010 plus (Shimadzu Corporation)

Gas chromatograph with ECD and FID and gas chromatograph mass spectrometer

Can check and measure amounts of a variety of ingredients



Measures residual amounts of fertilizer

Overview of device
This device isolates chemical substances such as medicine in gaseous form, and finds qualitative and quantitative information on them.

Purpose
It can analyze medicines, residual fertilizers in herbal drugs, and dangerous drugs.

Specification
Gas chromatograph with ECD and FID and gas chromatograph mass spectrometer
Model: GC - 2014,
GCMS - QP2010 SE
(Shimadzu Corporation)

Analysis equipment

Atomic absorption spectrophotometer

Measurable of metal content in pharmaceutical products or raw material of drugs

Overview of device
This device is used for measurement of metal content and in addition to flame analysis, furnace analysis for more high sensitive analysis is available. Mercury analysis by reduced evaporated atomic absorption photometry is also possible.

Purpose
Measurement of metal content for impurity study of pharmaceutical products.

Specification
Atomic absorption spectrophotometer Model: AA-7000 Flame/furnace system (Shimadzu Corporation)

High-pressure liquid chromatograph

Analysis time is remarkably shortened compared with regular liquid chromatography

Overview of device
This device is used for separation of elements in pharmaceutical drugs, etc. and qualitative and quantitative analysis. Since it corresponds to ultra-high pressure, rapid high-separation analysis using column with particle size of about 2 micro meters is possible.

Purpose
Quantitative study for quality control of pharmaceutical products and element analysis of crude drugs.

Specification
Ultra-high performance liquid chromatography with photodiode array detector: ACQUITY UPLC H Class System (Nippon Waters K.K.)

Fully automatic elution testing device

Fully automated from implementation of elution test to cleaning work.

Overview of device
This device investigates the elution of the active ingredients of pharmaceuticals.

Purpose
It can find the elution curve (a graph showing the relationship between elution rate and elution time) for solid oral pharmaceuticals.

Specification
- Automatic elution test device Model: RT-3Std (DAI NIPPON SEIKI CO., LTD.)
- Spectrophotometer Model: UV-1850 (Shimadzu Corporation)

Equipment for research and development of drug

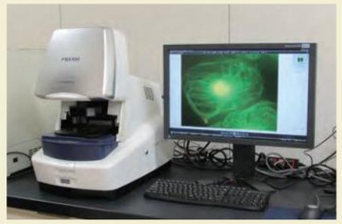
Study equipment that support research and development of drug is placed

Confocal laser scanning microscope

This device makes target molecules from tissue sections or cultured cells visible, by causing reactions with fluoresceinated substances such as antibodies.
It can analyze localized changes to molecules inside a living body when a drug is administered, or localized changes to a fluoresceinated polymer drug inside a living body.

Box-shaped fluorescence microscope

This is a box-shaped fluorescence microscope which does not require a dark room.
It includes the "fluorescence," "phase contrast" and "bright field" viewing modes and imaging modes include "normal," "Z-stack" and "stitching," allowing viewing and recording of samples such as tissue sections with easy operations.



Real time PCR device

This device uses a system with an integrated gene amplification device and spectrofluorometer to perform simultaneous amplification and detection of DNA via PCR in a single tube, and detect and analyze the generated amount of the amplified product in real time.
It can perform 4 types of simultaneous gene expression analysis (multiplexing).

Frozen section preparation device

This device is for creating thinly sliced sections for specimens at low temperatures of -16 to -20° C from frozen tissue.
As frozen sections are not exposed to high temperatures, alcohol or organic solvents, the device is particularly good for histochemical detection of enzymes, proteins, amino acids and the like.

In-vivo imaging device

This device detects weak light emissions or fluorescence inside a living body, without killing the animal.
It can be used with mice suitable for light emission or fluorescence imaging to analyze the expression of molecules related to disease or the aggregation of cancer cells over time. *Located in the animal experiment wing

Safety cabinet

The class II safety cabinet is experimental equipment for enclosing biohazardous materials such as pathogens or genetically modified organisms, and enables work to be done under sterile conditions.