Toyama Prefectural Institute for Pharmaceutical Research

Research Center for Drug Development and Quality Control

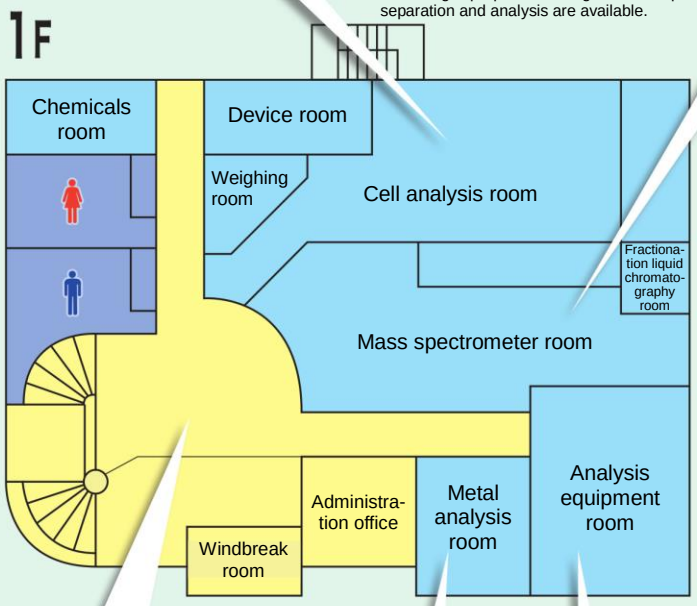
Research Center for Drug Development and Quality Control

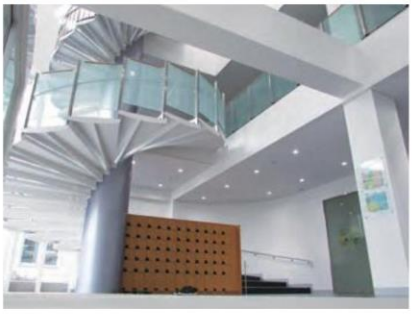
Purpose of establishment

- High grade analytical equipment is prepared to promote research and development of high value added products such as bio-pharmaceutical products.
- Technology development and human resource development is promoted by preparing the consulting office for the companies in Toyama prefecture and conference rooms for training.

In addition to cell sorter and flow cytometer, inter-molecule interaction analyzer and chemiluminescence imaging system are prepared and from cell culture to analysis by these devices are available.

In addition to various mass analyzer that can precise measurement or high sensitive mass spectrometry, ultra-high performance liquid chromatography that can detect fluorescence and evaporative light scattering is prepared and high level component separation and analysis are available.





An atmosphere easy to visit is created by well lighted spiral stairs and open ceiling.

Trace element analysis in medicinal products and in organism is performed in this specialized room for ICP mass spectrometer.

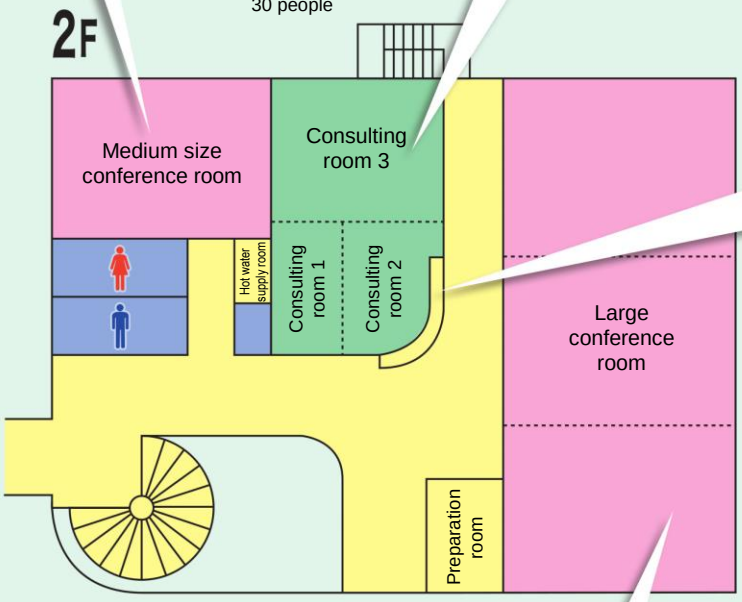
Various analysis device such as capillary electrophoresis system, infrared spectrophotometer with infrared microscope and potential-difference automatic titration device will be placed for various medicinal products analysis.

● **Medium size conference room**

Area	58 m² (8.9 m × 6.5 m)
Capacity	Classroom style 36 people Conference style 30 people

● **Consulting room**

Area	① 17.3 m² (5.4 m × 3.2 m) ② 17.6 m² (5.4 m × 3.26 m) ③ 41.8 m² (5.8 m × 7.2 m)
Capacity	① 6 people ② 6 people ③ 10 people



Wooden bench from timber from Toyama prefecture

● **Large conference room**

Area	242 m² (21.6 m × 11.2 m) Dividable into 3 rooms (7.2 m × 11.2 m)
Capacity	Classroom style 120 people Conference style 84 people
Annexed equipment	Screen (manually rolling-up style), sub-monitor, loudspeaker system, wired microphone and wireless microphone

Analysis device

Liquid Chromatography Time-of-Flight Mass spectrometer (LC-TOF/MS)

Overview of device	After separation of elements in the sample, accurate mass of each element is analyzed and substance name is estimated from database.
Purpose	This device can estimate structure of trace impurity in medicinal products and identify the metabolite from the medicinal products. It can be used for confirmation of protein structure of biomedicine (antibody drugs, etc.) and exploration of candidate of bio marker substance, too.
Specification	Model: maXis II, Elute UHPLC (Bruker Japan K.K.) • Liquid chromatography (LC) • Time-of-flight mass spectrometer (TOF/MS) • Various data analysis software

Liquid chromatography tandem quadrupole type mass spectrometer (LC-MS/MS)

Overview of device	After separation of elements in the sample, trace elements are detected and evaluated.
Purpose	This device can determine the amount of impurity in medicinal products. It can determine the amount of specific biologically active substances in the absorbance, distribution, metabolism and excretion process of administered medicine and in blood.
Specification	Model: Xevo TQ-XS, ACQUITY UPLC H-Class (Waters K.K.) • Liquid chromatography (LC) • Tandem quadrupole type mass spectrometer (MS/MS) • Data analysis software

Multifunctional ultra high performance liquid chromatography (UHPLC)

Overview of device

This device is used for rapid separation, confirmation and quantitative determination of various elements.

Purpose

It is ultra-high pressure (up to 105 MPa) liquid chromatography system that includes 6 type detector and is usable for wide application including development of testing method and quality control of biomedicine and low-molecule medicine.

Specification

Model: ACQUITY UPLC H-Class Bio System (Waters K.K.)

- Equipped with 4 liquid gradient pump.
- Simultaneous detection by multiple detectors is available.
- Analysis of biological macromolecule is available.
- Analysis under the condition of regular liquid chromatography is available.

ICP mass spectrometer

Overview of device

This device evaluates concentration of trace element in a sample by decomposing molecule into element and determining the mass of each element.

Purpose

It can evaluate safety by determination of toxic elements in medicinal products and determine useful metal compounds included in crude drugs.

Specification

Model: Agilent 7900 (Agilent Technologies Japan, Ltd.)

- Induction coupling plasma mass spectrometer (ICP-MS)
- Data analysis software
- Microwave sample pretreatment equipment

Equipment for research and development of drug

Cell sorter

Overview of device	This device is used to analyze proportion of specific cell population among miscellaneous cell population and isolate objective cell population in its living state.
Purpose	Analysis of cellular construction change by medicine treatment in the tissue and the blood is available by cell analysis function. Comparison of gene expression is capable by isolation of specific cell population by cell isolation function.
Specification	Model: FACSAria III (Nippon Becton Dickinson Co., Ltd.) • Equipped with 4 lasers. (488 nm/633 nm/405 nm/561 nm) • Ten fluorescence at maximum can be detected.

Flow cytometer

Overview of device	This device uses a high-speed flow of suspended cells to analyze the relative sizes of individual cells and the complexity of intracellular structures in a short time.
Purpose	By fluorescently labeling the target cells or molecules, it is possible to perform quantification or analysis of cell types or abundance ratios.
Specification	Model: BD FACSCanto II (Nippon Becton Dickinson Co., Ltd.) • Equipped with 2 lasers (488 nm/633 nm). • Six fluorescence at maximum can be detected, measurement format: fluorescence and luminescence.

Chemiluminescence imaging system

Overview of device	This device can detect trace emission as low background image. It includes exciting light source for fluorescence and can detect and photograph the fluorescence.
Purpose	Mainly used for western blotting and quantitative analysis of obtained band and molecular mass analysis is available.
Specification	Model: FUSION-FX7.EDGE Auto-focus model (Vilber-Lourmat) • −42°C Cooling CCD camera • Exciting light source for fluorescence (480 nm, 530 nm, 640 nm, 740 nm) • Fluorescence filter (565 nm, 595 nm, 740 nm, 820 nm) • UV incident light source

Inter-molecule interaction analyzer

Overview of device	This device is used for unlabeled real-time monitoring of interaction (binding and dissociation) of protein, nucleic-acid, low-molecule compound and cells by surface plasmon resonance.
Purpose	It can analyze binding specificity and binding affinity between substances and determine concentration of analysis object substance in sample. It is usable for wide application including from initial exploratory research to production or quality control of development of biomedicine or low-molecule medicine.
Specification	Model: Biacore T200 (GE Healthcare Japan, Corp.) Detection principle: Surface plasmon resonance

Other equipment in cell analysis room

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 preventing contamination of dust or saprophytic bacteria.

[Model: AC2-6N7 Esco Japan]

High speed refrigerated micro centrifuge

From 0.5 mL of micro sample to 50 mL of large sample can be centrifuged in high speed with cooling.
With “Rack-in Rotor” system, only a rack can be attached and removed easily and multiple micro samples can be handled.

[Model: MX-307 TOMY SEIKO]

CO_2 incubator

Equipment used to maintain CO_2 concentration and temperature constant.
It is used for culture of animal cell.

[Model: MCO-170AICUV Panasonic Healthcare]

Autoclave

Device that is saturated with hot high pressure steam to sterilize laboratory tool or other instruments

[Model: HG-50LB Hirayama Manufacturing Corp.]

Inverted type routine microscopy

Morphology observation of cultured cell and collected cell

[Model: CKX53 Olympus]

Semi-dry blotting device

Device that is used to transfer sample in the gel after electrophoresis to membranes. It is used for western blotting, that is procedure for protein analysis.

[Model: Trans-Blot Turbo, blotting system Bio-Rad laboratories]

Seesaw type shaker

Shaking device like a seesaw. Used for staining of gel, antibody reaction or washing of membrane during western blotting.

[Model: In vitro shaker Wave-SI TAITEC]

Large autoclave

Device that is used for sterilization of cages or working wears that are used for rearing of experimental animals.
It can sterilize with clean steam using RO water.
* Established in animal experiments wing.

[Model: UH68-U10H-D-MT Udono Limited]

Research Center for Drug Development and Quality Control — List of fees

(As of April 1st, 2018)

Device name	Use fee	Installation location
Liquid Chromatography Time-of-Flight Mass spectrometer (LC-TOF/MS)	16,870 yen per hour	Mass spectrometer room
Liquid chromatography tandem quadrupole type mass spectrometer (LC-MS/MS)	6,470 yen per hour	
Multifunctional ultra high performance liquid chromatography (UHPLC) (Ultra high performance liquid chromatography with fluorescent detector, ultraviolet visible light absorbance detector, differential refractive index detector, mass spectrometer, evaporative light scattering detector and photodiode array detector)	3,350 yen per hour	
ICP mass spectrometer	4,900 yen per hour	Metal analysis room
Cell sorter	6,120 yen per hour	Cell analysis room
Inter-molecule interaction analyzer	5,010 yen per hour	
Flow cytometer	1,720 yen per hour	
Chemiluminescence imaging system	880 yen per hour	
Safety cabinet	250 yen per hour	
High speed refrigerated micro centrifuge	220 yen per hour	
Inverted type routine microscopy	150 yen per hour	
Semi-dry blotting device	130 yen per hour	
Autoclave	150 yen per hour	
Seesaw type shaker	120 yen per hour	
CO_2 incubator	3,000 yen per day	
Polarimeter	1,240 yen per hour	Analysis equipment room
Karl Fischer moisture meter (Coulometric titration method)	660 yen per hour	Weighing room
Micro balance	220 yen per hour	

- Infrared spectrophotometer with infrared microscope, capillary electrophoresis system, automatic melting point measuring device, potential-difference automatic titration device, Karl Fischer moisture meter (Capacity titration method) and semi-micro balance will be also installed in FY2018.
- If use time is less than use fee unit or there is fraction that is less than unit, round up to the nearest whole number.
- If user is company outside Toyama prefecture, use fee will be 1.5 times as above fee in principle. (Any fraction smaller than 10 yen, shall be discarded)

Institute for Pharmaceutical Research　List of fees

(As of April 1st, 2018)

1　Use fee

(1)　Production equipment

Type	Unit	Fee
Micro pulvelizer	Per one hour and one machine	230 yen
Vibrating filter		350 yen
Mixer (V type large)		230 yen
Piston granulation machine (basket type)		360 yen
Piston granulation machine (screw type)		850 yen
Mixing/granulation machine		950 yen
Grain size controller		510 yen
Spherical shape granulation machine		350 yen
Tableting machine (single punch type)		230 yen
Tableting machine (rotary type)		3,110 yen
Fluidized-bed granulation coating machine		800 yen
Complex type fluidized-bed granulation coating machine		4,340 yen
Film coating machine for tablets		2,650 yen
Kneading machine		230 yen
Dry granulator		1,830 yen
Semi automatic PTP packaging machine		3,050 yen

(2)　Testing equipment

Type	Unit	Fee
Refractometer	Per one hour and one machine	230 yen
Spectrophotometer		230 yen
Gas chromatography with FID		230 yen
Gas chromatography with ECD and FID and gas chromatography mass spectrometer		1,040 yen
Head space sampler, automatic sampler and gas chromatography with FID		490 yen
Karl Fischer moisture meter (Capacity titration method)		260 yen
Karl Fischer moisture meter (Coulometric titration method)		660 yen
Potential-difference titration device		270 yen
Electric furnace		350 yen
Liquid chromatography		350 yen
Atomic absorption spectro-photometer		1,030 yen
ICP mass spectrometer		4,900 yen
Fractionation liquid chromatography		350 yen
Freeze dryer		2,090 yen
Color difference meter		460 yen
Spectrophotometer		460 yen
Infrared spectrophotometer		460 yen
Polarimeter		1,240 yen
Ultra high performance liquid chromatography with photodiode array detector		630 yen
Ultra high performance liquid chromatography with fluorescent detector, ultraviolet visible light absorbance detector, differential refractive index detector, mass spectrometer, evaporative light scattering detector and photodiode array detector		3,350 yen
Liquid Chromatography Time-of-Flight Mass spectrometer		16,870 yen
Liquid chromatography tandem quadrupole type mass spectrometer		6,470 yen
Elution test device		800 yen
Orally disintegrating tablet test device		590 yen
Multifunctional powder property measuring machine		1,230 yen
Tablet durometer		210 yen

Type	Unit	Fee
In vivo imaging device	Per one hour and one machine	3,020 yen
Taste confirming apparatus		2,340 yen
Confocal laser microscope		2,140 yen
Flow cytometer		1,720 yen
Cell sorter		6,120 yen
Laser diffraction particle size analyzer		1,030 yen
Box type fluorescence microscope		780 yen
Frozen section preparing device		410 yen
Real-time PCR device		350 yen
Inter-molecule interaction analyzer		5,010 yen
Chemiluminescence imaging system		880 yen
Large autoclave		540 yen
Autoclave		150 yen
Safety cabinet		250 yen
High speed refrigerated micro centrifuge		220 yen
Micro balance		220 yen
Inverted type routine microscopy		150 yen
Semi-dry blotting device		130 yen
Seesaw type shaker		120 yen
Thermo- humidistat	Per one day and one machine	120 yen
Particle counter		980 yen
Optical filter for calibration		770 yen
Standardized thermometer by Pharmacopeia of Japan		680 yen
CO_2 incubator		3,000 yen

(3)　Open test room

Type	Unit	Fee
Open test room	Per one hour	200 yen

(4)　Animal experiment room

Type	Unit	Fee
Mouse rearing cage	Per one day and one cage	340 yen

- If use time is less than use fee unit or there is fraction that is less than unit, round up to the nearest whole number.
- If user is company outside Toyama prefecture, use fee will be 1.5 times as above fee in principle. (Any fraction smaller than 10 yen, shall be discarded)

2 Commission

(1) Acceptance test of Japanese Pharmacopoeia drugs or Japan Pharmaceutical Codex (excluding animal experiment)

Type	Unit	Fee
Acceptance test of drugs listed in the Japanese Pharmacopoeia or the Japan Pharmaceutical Codex with quantitative tests	1 specimen	19,230 yen
Acceptance test of drugs listed in the Japanese Pharmacopoeia or the Japan Pharmaceutical Codex without quantitative tests		12,720 yen
Acceptance test of crude drugs in the Japanese Pharmacopoeia or the Japan Pharmaceutical Codex without quantitative tests		6,810 yen

(2) Japan Pharmacopoeial Tests or that simulate them (excluding animal experiment or cell tests)

Type	Unit	Fee
Japan Pharmacopoeial tests or that simulate them using special equipment and device	1 item for 1 specimen	5,020 yen
Other Pharmacopoeial Tests or that simulate them		2,650 yen

(3) Qualitative test or quantitative test (excluding animal experiment or cell tests)

Type	Unit	Fee
Qualitative test or quantitative test using special equipment and device	1 component for 1 specimen	5,020 yen
Other qualitative test or quantitative test		2,650 yen

(4) Effect test of coexisting components in drug product

Type	Unit	Fee
Effect test of coexisting components in drug product	1 item for 1 specimen	8,000 yen

(5) Animal experiment

Type	Unit	Fee
Acute toxicity test (mouse)	1 specimen	56,100 yen
Acute toxicity test (rat)		69,850 yen
Pharmacology (general test)		35,420 yen
Pharmacology (complex test)		72,920 yen

(6) Cell tests

Type	Unit	Fee
Cytotoxicity study	1 specimen	64,370 yen
Cell functional analysis	10 samples	65,950 yen

(7) Other tests (excluding animal experiment or cell tests)

Type	Unit	Fee
Profiling of crude drugs	1 specimen	8,530 yen
Testing of container or packaging material		8,390 yen
Other tests	For 1 study for 1 specimen	Not less than 960 yen Not more than 10,890 yen

(8) Technical guidance of equipment operation

Type	Unit	Fee
Technical guidance of equipment operation	1 hour	4,060 yen

(9) Development of product standard and test methods

Type	Unit	Fee
Development of product standard and test methods	1 item	8,530 yen

(10) Delivery of a copy of Certificate of Analysis

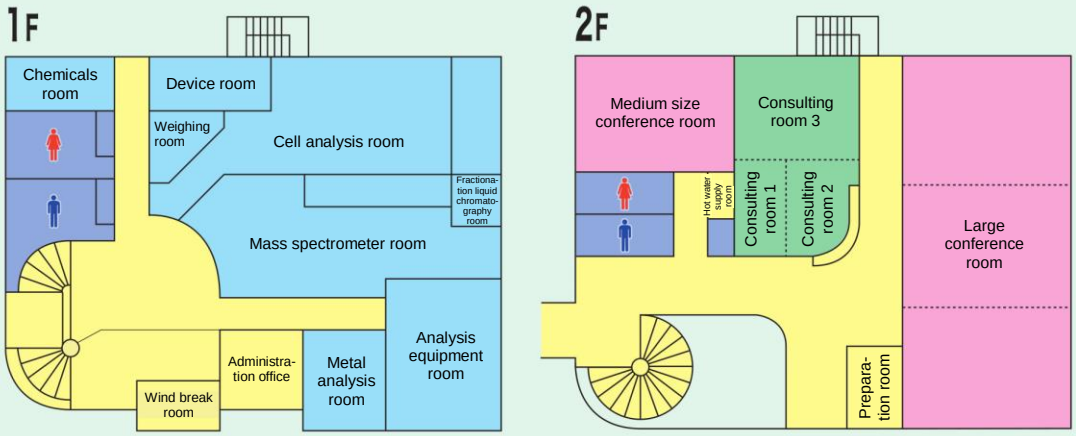
Type	Unit	Fee
Delivery of a copy of Certificate of Analysis	1 copy	830 yen

(11) Document copy

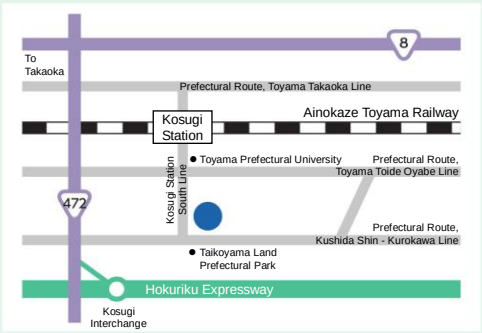
Type	Unit	Fee
Document copy	1 sheet	30 yen

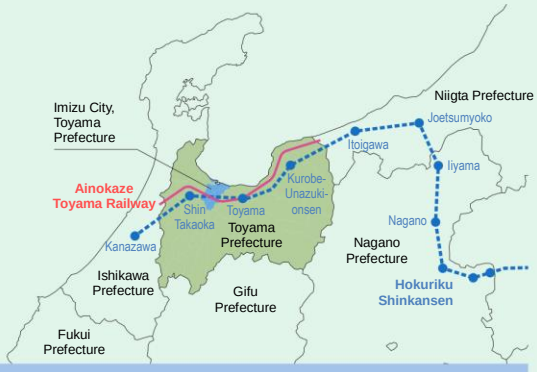
- If use time is less than use fee unit or there is fraction that is less than unit, round up to the nearest whole number.
- If user is company outside Toyama prefecture, use fee will be 1.5 times as above fee in principle. (Any fraction smaller than 10 yen, shall be discarded)

• 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

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