

National Museum of Nature and Science

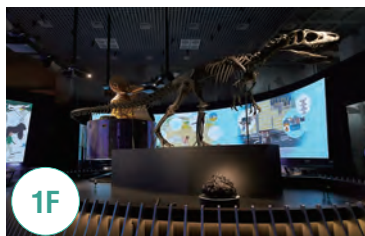
Museum Guide

Human Beings in Coexistence with Nature

The exhibit encourages us to think about what we can do to protect our home planet, with the goal of working towards a future based on the harmonious balance of the Earth's ecosystem.

Global Gallery The History of Life on Earth

The Global Gallery features an exhibit on the coevolution of the Earth and its inhabitants, along with a history of the development of intelligent thought in humans.



1F

Navigators on History of Earth

Based on the epic themes "History of the Universe", "History of Life", and "History of Humankind", travel back in time and experience 13.8 billion years of history through specimens, documents, and videos. It is the centerpiece that links the exhibition halls of the Global Gallery.



2F

Investigation Technology for the Earth

There are many interactive displays making it possible to instinctively experience the physics related to light and magnetism, which are the foundation of observation technology. And geomagnetism and magnetic fields are explained through familiar phenomena such as compass.



3F

ComPaSS

Exploration area for families with children

It is necessary to purchase tickets and book dates and times in advance on an external website.

This exhibition room is designed for children and their parents or guardians. It encourages parent-child communication through play, aiming to foster the abilities of feeling and thinking.



1F

Biodiversity

The evolution of life on Earth has produced some 10 million different species. Although all the species share the basic characteristics of living organisms, each species has adapted in form and lifestyle to its own particular environmental circumstances. No species lives in isolation; our lives are intricately interwoven.



2F

Progress in Science and Technology

This exhibit showcases some Japanese inventions from the Edo period onwards. Japanese culture maintains its unique identity and its close communion with nature, while at the same time having interaction with foreign cultures.



3F

Animals of the Earth

The diversity of mammal and bird life on Earth is proof of the bountiful nature of the Earth's ecosystem. The specimens presented here still convey something of the strength and endurance of these species.



B1F

Evolution of Life

-Exploring the Mysteries of Dinosaur Evolution-

Today, reptiles and birds are quite different animals. Studying dinosaurs however bridges the gap between the two. There are countless mysteries including the origin of dinosaurs, their increase in size, diversification, and their extinction. How much can we learn from the silent testimonies of fossils?



B2F

Evolution of Life - From the Earth's Origin through Human Existence

Since their beginnings some four billion years ago, life forms have become increasingly diverse due to the ongoing process of environmental adaptation. Human beings, part of the mammal group have acquired highly developed adaptive capabilities, thanks to superior dexterity and powers of reasoning. This adaptive capacity has enabled humans to extend their reach to all corners of the Earth. In this exhibit, you can trace the evolutionary path and learn how plants and animals have adapted to the changing environment.



B3F

Exploring the Structure of Nature

The vast universe, the mystery of life along with its components, and the laws that govern these... Our understanding of these things is the foundation of all scientific recognition. Discoveries that have widened our view and changed our understanding of nature along with the people who contributed to these are introduced.

Japan Gallery The Environment on the Japanese Islands

Exhibited here in this Japan Gallery are the nature and history of the Japanese Islands, the evolution of its endemic organisms, the process by which the modern Japanese population was formed, and the history of our contact with nature.



1F South

Techniques in Observing Nature

The people of the Japanese Islands have been sensitive in observing the richness and diversity of nature around them since the beginning of their history. Our daily life in harmony with nature has also enabled us to acquire uniqueness in manufacturing and industry. Tools, instruments, crafted objects and literature handed down from their own time to the present, demonstrate our activities in the fields of science and technology.



2F South

Organisms of the Japanese Islands

Through the repetition of glacial and interglacial cycles dating back about 1.7 million years, the variety of these living organisms migrated from the continent to the Japanese Islands by crossing the strait, which had turned into land during the glacial stage. During the interglacial stage, when they were cut off from the continent by the ocean, these living organisms achieved their unique differentiation as they adapted to the transformation of the natural environment of the Japanese Islands, with its varied climate and complex topography.



3F South

Nature of the Japanese Islands

From a geochronological viewpoint, the Japanese Islands underwent rapid fluctuations due to crustal movements, and these led to the formation of complex geological structures and a rich mountainous topography. The Japanese Islands have four distinct seasons and are strongly affected by monsoon and ocean currents. The complex topography and climate of the natural environment has given rise to diverse forms of life.



1F North

Exhibition hall (for temporarily exhibition)

Various short-term exhibits or events will be held here every season.



2F North

Japanese People and Nature

Around 40,000 years ago, our ancestors encountered a land rich in forests and oceans at the eastern edge of Asia, and they began to settle in the Japanese Islands. Thereafter, various other groups of people brought their distinctive cultures to the islands. These peoples came together while still maintaining particular aspects of their culture. Our ancestors skillfully interacted with the natural environment of the Japanese Islands through the invention of pottery, the cultivation of plants and other techniques.



3F North

History of the Japanese Islands

On the Japanese Islands, with their complex and unique geological history, numerous species have repeatedly appeared, flourished, and become extinct. The evidence of these past lives entombed in layers of rock tells of this dynamic and changing history, from the time the Japanese land mass first split away from the continental margin to when it formed an archipelago.



B1F

THEATER360

A visual facility that projects a 36-degree view of images and videos, providing a one-of-a-kind experience of weightlessness and impact. Enjoy the original programs we have in store for you.

Some visitors may experience disorientation or discomfort due to the floating sensations or sense of speed created by the unique format of the show. Particular care should be taken with small children, visitors who are not feeling well, expectant mothers, senior citizens, and those who have a heart condition.

Intoxicated persons, unaccompanied preschool children, and groups of preschool children are not permitted to enter.



B1F

Foucault Pendulum

In 1851 the French physicist Foucault used this type of pendulum to prove the rotation of the earth.



Central Hall

Japan Gallery building

The construction of the building, which has a unique Neo-Renaissance style architecture by the Ministry of Education then, was completed in September 1931. It has the shape of an airplane that was a symbol of the state-of-the-art technology in the early Showa Era when this building was constructed.

Visitor Information

Opening hours

9:00AM-5:00PM (Last entry to Museum 4:30PM)
 ※Hours are subject to change.

Closed

On Mondays except public holidays*
 *the following day if it falls on a Monday
 December 28 - January 1
 For 5 days starting Monday of the 4th week of June due to annual maintenance
 ※Days closed are subject to change.

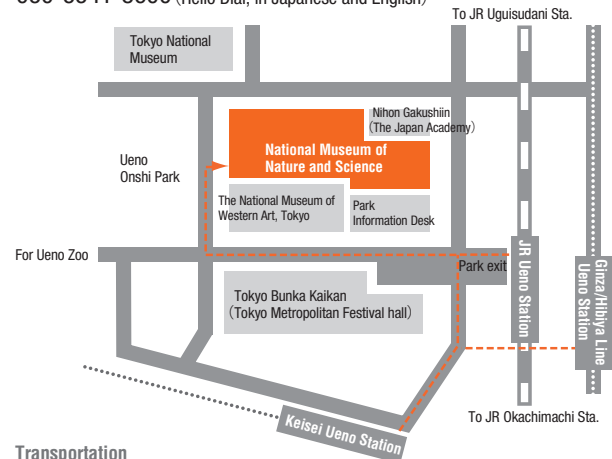
Admission fees to the permanent exhibition

	Categories	Prices	Remarks
Suggested	General and university students	630yen	
	High-school students and younger	Free	
Groups	General and university students	510yen	A group must consist of at least 20 people
	Night visit for astronomical observation		
Night visit for astronomical observation	General and university students	320yen	On the 1st/3rd Fridays of the month, approx. 2hours after twilight on clear night <small>*Online bookings</small>
	High-school students and younger	Free	

※Free of charge: Children aged 17 and younger, Seniors aged 65 and over, Disabled visitors (with one caregiver per the person)
 ※Separate admission fee is required for special exhibitions.

Inquiries

050-5541-8600 (Hello Dial, in Japanese and English)



Transportation

- 5 min. walk from JR Ueno Station, Park Exit
- 10 min. walk from Tokyo Metro Ginza/Hibiya Line Ueno Station
- 10 min. walk from Keisei Line Keisei Ueno Station (We have neither parking area for cars nor bicycles)



<https://www.kahaku.go.jp>

Address:7-20 Ueno Park, Taito-ku, Tokyo 110-8718



2024.1

Supporting Members

The National Museum of Nature and Science invites you to become a Supporting Member. Membership helps support our activities, which include raising interest and awareness among young people towards the natural sciences, collaborative events with regional museums, and preparing, purchasing, preserving and restoring specimens. Please see our website for details of membership benefits, annual fees, and how to apply.



FMNS Membership, the Repeaters Pass, and the Midori no pass

The Museum offers the FMNS(Friends of the National Museum of Nature and Science) , the Repeaters Pass, and the Mirori no pass in order to foster links between the Museum and communities and enhance familiarity with the Museum and its activities.To find out how to become a member, please ask at Membership Desk on the 1st basement floor (B1F) in Japan Gallery.



Other Facilities in our institution



Institute for Nature Study

A variety of environments in the garden preserve the atmosphere of the old Musashino Plain.
 *national monument and historical landmark

Opening hours

For September 1 to April 30
 9:00-16:30 (last admission is 16:00)
 For May 1 to August 31
 9:00-17:00 (last admission is 16:00)

Admission Fees

General and university students 320yen
 High-school students and younger Free

Closed

On Mondays except public holidays*
 *the following day if it falls on a Monday
 The day after a national holiday (but remains open on Saturday and Sunday)
 December 28 - January 4

Inquiries

5-21-5, Shirokanedai, Minato-ku, Tokyo, 108-0071
 TEL: 03-3441-7176



Tsukuba Research Departments

Conduct activities of research related to natural history and history of science and technology.

Not opened facility to general visitors.

Inquiries

4-1-1, Amakubo, Tsukuba-shi, Ibaraki 305-0005
 Tel: 029-853-8901



Tsukuba Botanical Garden

The plants life found in different parts of Japan is recreated here.
 The facility also houses an astronomical observatory

Opening hours

For September 1 to April 30
 9:00-16:30 (last admission is 16:00)
[Night for astronomical observation]
 Available on the 2nd Saturday of the month, for about 2 hours after twilight on clear night.

Admission Fees

General and university students 320yen
 High-school students and younger Free
 Groups (20 or more visitors) 250 yen

Night visit for astronomical observation

General and university students 320yen
 High-school students and younger Free
Closed
 On Mondays except public holidays*
 *the following day if it falls on a Monday
 The day after a national holiday (but remains open on Saturday and Sunday)
 December 28 - January 4

Inquiries

4-1-1 Amakubo, Tsukuba-shi, Ibaraki, 305-0005
 TEL: 029-851-5159

Multimedia/Kit : Have more fun



KAHAKU HANDY GUIDE [free]

You can use your smartphone or other mobile device to explore descriptions of our collection and more.
 Available for, Japanese, English, Chinese, and Korean.



Audio Guide to Permanent Exhibition [320yen, Free of charge for Disabled visitors]

The Audio Guide for both player and tablet offers informative commentaries on exhibits by native speakers for each language which do not just introduce our fascinated collections but also guide you deeply the world of nature and science.
 English, Mandarin or Korean are available in addition to Japanese/Japanese for kids.



Interactive Kiosk as information terminal [Placed in each permanent exhibition hall]

Kiosk, a touch-screen information terminal which provides specific information, explanation or videos on each permanent exhibit.
 English, Mandarin or Korean are available in addition to Japanese.

SNS



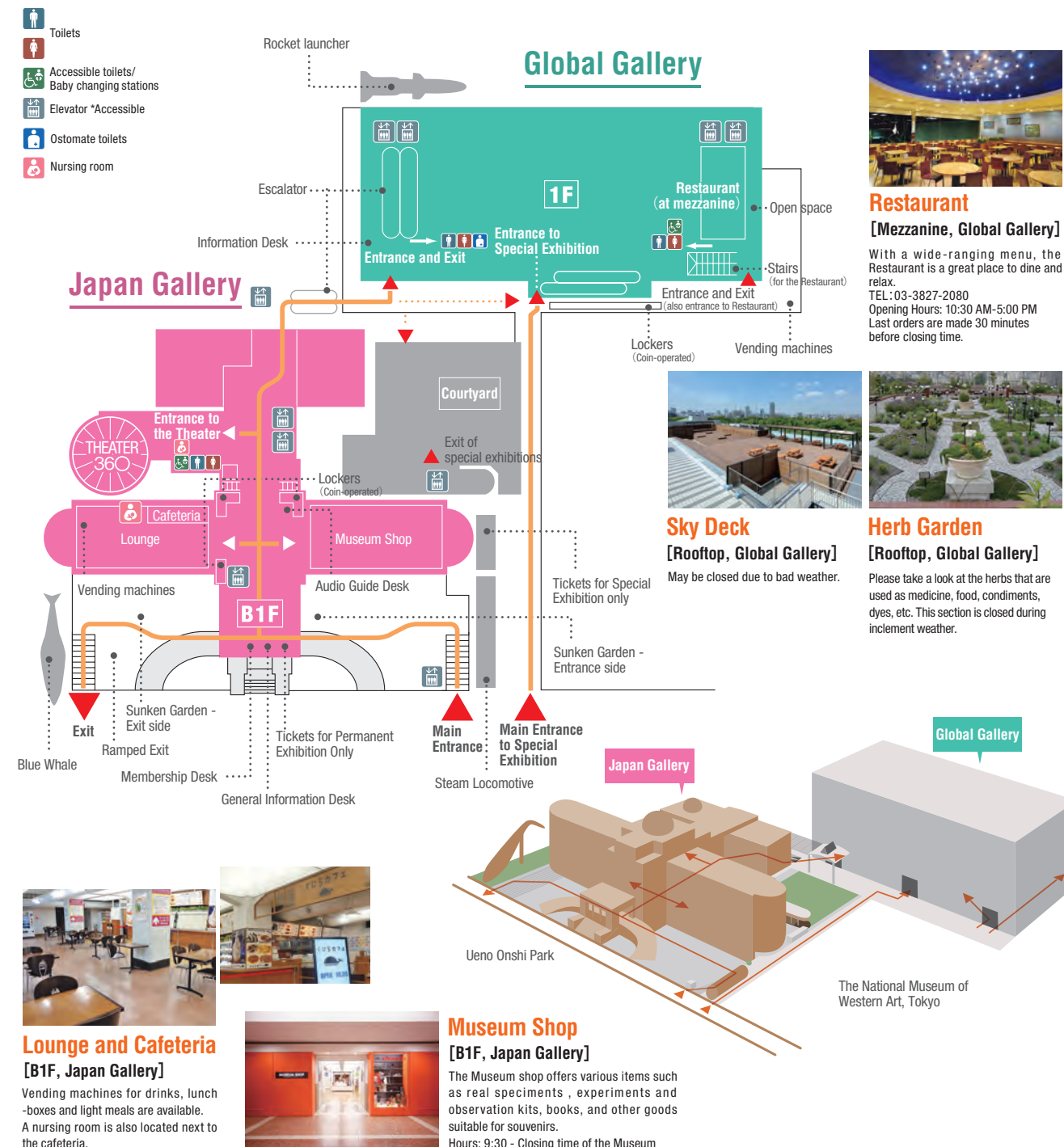
PLEASE NOTE

Photography and filming

- This includes photography and filming for personal, non-commercial use that does not interfere with operations or safety of the Museum and, infringe on other's right of portrait.
- Area or object where photography is prohibited.
 1. With a prohibition sign
 2. Videos and Images which are projecting/screening in the Museum property
 3. Inside of Theater 360
- Please follow each instruction for Special Exhibition or Temporary Exhibition
- The use of monopods, tripods, selfie sticks, flash and additional lights is prohibited in the museum.
- Taking group photos is also not allowed in the museum.

Do not eat/drink in the exhibition halls.

National Museum of Nature and Science (Global Gallery • Japan Gallery) Museum MAP

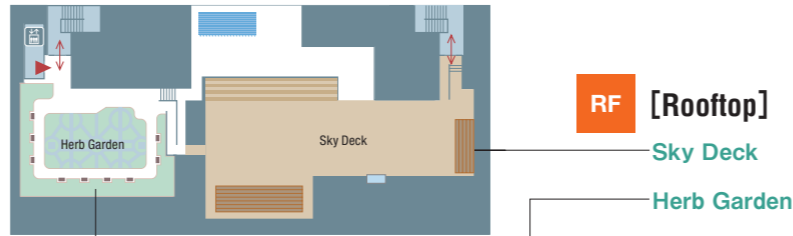


Animals of the Earth



- 1. Peak of Evolution : Large Wild Mammals**
 - ① Peak of evolution : large wild mammals
- 2. Way of Survival**
 - ② Way of survival
- 3. Mammals in Savanna**
 - ③ Mammals in savanna
- 4. Our Evolutionary Kindred**
 - ④ Our evolutionary kindred
- 5. On the Brink of Extinction**
 - ⑤ On the brink of extinction
- 6. Birds of Diverse Appearances**
 - ⑥ Birds of diverse appearances

RF



RF [Rooftop]

Sky Deck

Herb Garden

- Toilets
- Accessible toilets/ Baby changing stations
- Accessible toilets
- Ostomate toilets
- Drinking fountain
- Elevator *Accessible
- Discovery pocket
- Nursing room

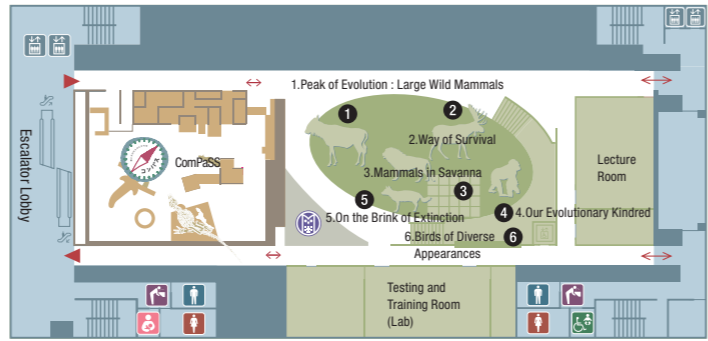
2F **Investigation Technology for the Earth**

- A. GED (Global Environmental Detector)**
 - ① GED (Global environmental detector)
- B. The Science to Investigate the Earth**
 - ① Investigate the ground
 - ② Investigate interior of the earth

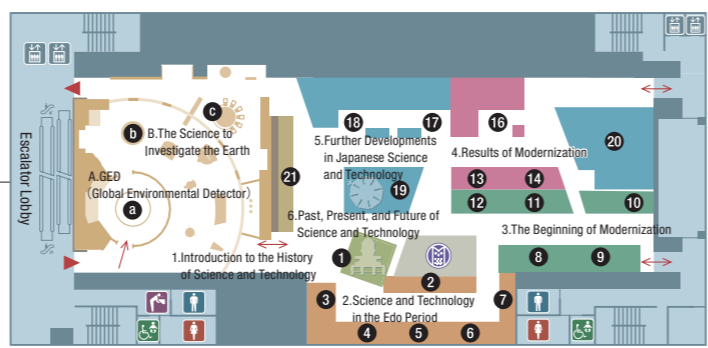
Progress in Science and Technology

- 1. Introduction to the History of Science and Technology**
 - ① Introduction to the history of science and technology
- 2. Science and Technology in the Edo Period**
 - ② Mining in the Edo period
 - ③ Development and popularization of arithmetic
 - ④ Astronomy and surveying
 - ⑤ Transition from herbalism to natural history
 - ⑥ Medicine in the Edo period
 - ⑦ Skills of the masters
- 3. The Beginning of Modernization**
 - ⑧ Standardization of criteria and systems
 - ⑨ Cultivating human resources for modernization
 - ⑩ Spread of modern science and technology
 - ⑪ Introduction of machine tools
 - ⑫ Introduction of electrical power systems
- 4. Results of Modernization**
 - ⑬ Inventions and creations by Japanese people
 - ⑭ Birth of the car manufacturing industry
 - ⑮ New technology: picture transmission
- 5. Further Developments in Japanese Science and Technology**
 - ⑯ Mechanical calculators
 - ⑰ Computers
 - ⑱ Space development in Japan
 - ⑲ Ocean Research in Japan
- 6. Past, Present, and Future of Science and Technology**
 - ⑳ Past, present, and future of science and technology

3F



2F



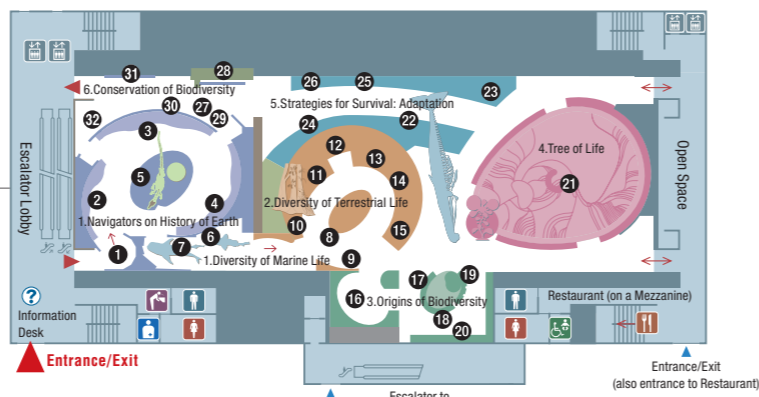
1F **Navigators on History of Earth**

- 1. Navigators on History of Earth**
 - ① All comprise atoms
 - ② History of the universe
 - ③ History of life
 - ④ History of humankind
 - ⑤ Time line stage

Biodiversity

- 1. Diversity of Marine Life**
 - ⑥ Photosynthetic ecosystem
 - ⑦ Chemical synthetic ecosystem
- 2. Diversity of Terrestrial Life**
 - ⑧ Various landscapes on earth
 - ⑨ The linkage of life
 - ⑩ Mangrove forests
 - ⑪ Tropical rainforests
 - ⑫ Wetlands
 - ⑬ Temperate forests
 - ⑭ Alpine regions
 - ⑮ Deserts
- 3. Origins of Biodiversity**
 - ⑯ What is life?
 - ⑰ Species of life
 - ⑱ Factors of diversification : evolution
 - ⑲ Factors of diversification : speciation
 - ⑳ Examples of diversification
- 4. Tree of Life**
 - ㉑ Tree of life
- 5. Strategies for Survival: Adaptation**
 - ㉒ Size factors
 - ㉓ Challenges of extreme temperature and humidity
 - ㉔ Seeking for nutrients
 - ㉕ Succession of life
 - ㉖ Symbiosis and parasitism
- 6. Conservation of Biodiversity**
 - ㉗ How much do we really know?
 - ㉘ Pursuit of biodiversity
 - ㉙ Red list
 - ㉚ Inter-specific network around Japanese crested Ibis
 - ㉛ Recovery of endangered species
 - ㉜ Networks on conservation of biodiversity

1F



M2F

- Japan Gallery**
- Exit
- General Information Desk
- Audio Guide Desk
- Museum Shop
- Lounge and Cafeteria
- THEATER 360

M2F **Great Japanese Figures in Science and Technology**

This exhibit can be easily accessed by stairs located in front of the Information Desk on the 1st floor or by escalator from the 2nd floor.

Global Gallery Floor **MAP**

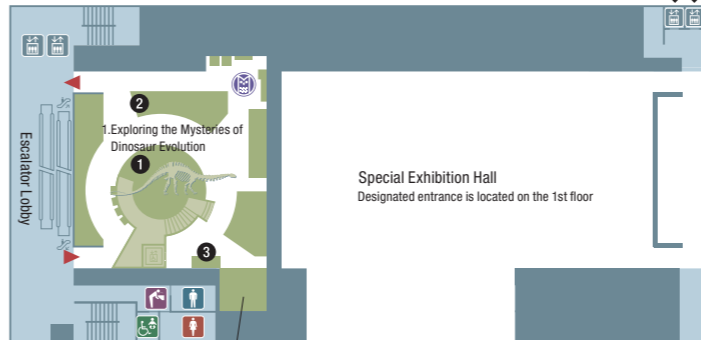
Evolution of Life
—Exploring the Mysteries of Dinosaur Evolution—



B1F

- 1. Exploring the Mysteries of Dinosaur Evolution**
 - ① Evolution of saurischian dinosaurs
 - ② Evolution of ornithischian dinosaurs
 - ③ The last day of the Mesozoic

The Special Exhibition Hall



B1F

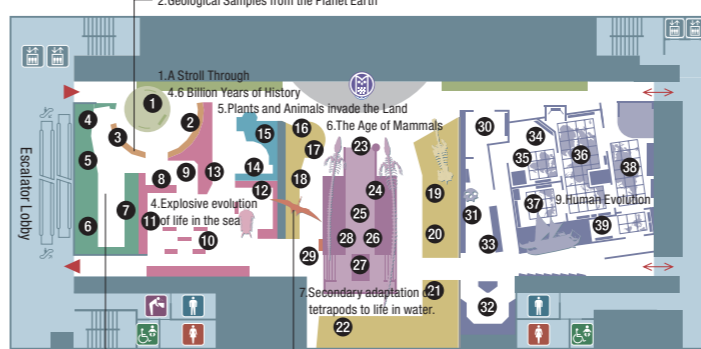
Evolution of Life
—From the Earth's Origin through Human Existence—



B2F

- 1. A Stroll Through 4.6 Billion Years of History**
 - ① A stroll through 4.6 billion years of history
- 2. Geological Samples from the Planet Earth**
 - ② Rocks and minerals
 - ③ Fossils
- 3. Biotic Response to Global Environmental Change**
 - ④ Records of global environmental change
 - ⑤ Mass extinctions
 - ⑥ Geosphere-biosphere interactions
 - ⑦ Microfossils
- 4. Explosive evolution of life in the sea**
 - ⑧ Precambrian microorganisms
 - ⑨ Vendian life
 - ⑩ Strange animals in Burgess Shale and Chengjiang Faunas
 - ⑪ Paleozoic invertebrates
 - ⑫ Trilobites in the paleozoic sea
 - ⑬ Evolution and success of fishes

- 5. Plants and Animals invade the Land**
 - ⑭ First steps on the land
 - ⑮ Greening the land
- 6. The Age of Mammals**
 - ⑯ Origin of the mammals
 - ⑰ Mesozoic mammals
 - ⑱ Early mammals lived in forests
 - ⑲ Early mammals lived in grasslands and arid lands
 - ⑳ Mammals of island continents
 - ㉑ Gravidiportal mammals
 - ㉒ Carnivorous mammals
- 7. Secondary adaptation of tetrapods to life in water.**
 - ㉓ Precambrian adaptation of tetrapods to life in water
 - ㉔ The forerunners of aquatic mammals
 - ㉕ Convergence to life in water
 - ㉖ A pioneer in new food resources.
 - ㉗ A gigantic marine reptile
 - ㉘ Diving birds
- 8. Flying tetrapods**
 - ㉙ Flying tetrapods
- 9. Human Evolution**
 - ㉚ Primate evolution
 - ㉛ The evolution of the Australopithecines and contemporary species
 - ㉜ The evolution of early Homo
 - ㉝ Reconstructing ancient humans
 - ㉞ The evolution and worldwide expansion of modern humans
 - ㉟ The expansion of modern humans: out of Africa again
 - ㊱ The expansion of modern humans: into Eurasia
 - ㊲ The expansion of modern humans: into Oceania
 - ㊳ The expansion of modern humans: into northern Eurasia
 - ㊴ The expansion of modern humans: into the Americas



B2F

Exploring the Structure of Nature

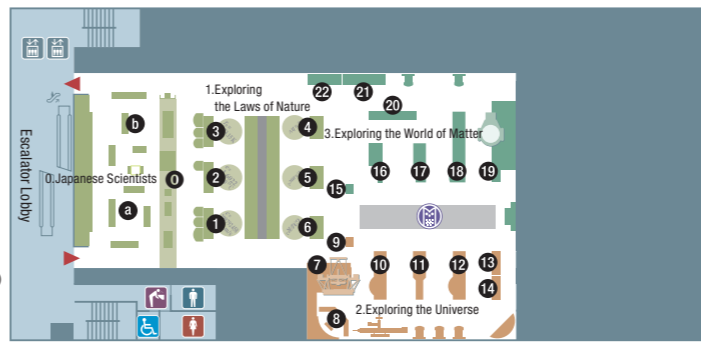


B3F

- 0. Japanese Scientists**
 - ① Japanese Nobel Prize laureates in physics, chemistry, and physiology or medicine
 - ② Japanese builders of science with items from our collection
- 1. Exploring the Laws of Nature**
 - ③ Exploring the world of elementary particles
 - ④ KEB accelerator & Belle experiment
 - ⑤ Measurements
 - ⑥ Measuring electricity and magnetism
 - ⑦ Measuring temperature
 - ⑧ Thermal radiation and energy
 - ⑨ Speed of light
 - ⑩ Gravity

- 2. Exploring the Universe**
 - ⑪ Telescopes: our eyes to investigate the universe
 - ⑫ Let's take a look at celestial bodies
 - ⑬ Hierarchical structure of the universe
 - ⑭ The solar system
 - ⑮ Fixed stars, nebulae, and star clusters
 - ⑯ Galaxies and clusters of galaxies
 - ⑰ Superclusters of galaxies and the large-scale structure of the universe
 - ⑱ The expansion of the universe and its origin

- 3. Exploring the World of Matter**
 - ⑲ Hierarchical structure of matter
 - ⑳ Periodic table: the diversity of elements
 - ㉑ Shape of molecules: a variety of matter
 - ㉒ Exploring the nanoworld
 - ㉓ Exploring the ultimate formation of matter
 - ㉔ Macroscopic properties and microscopic properties
 - ㉕ Functional materials
 - ㉖ Striving for environmentally friendly chemistry



B3F

Japan Gallery Floor MAP

2F North Japanese People and Nature



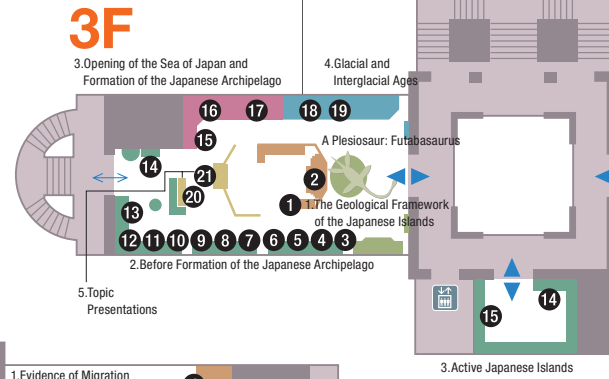
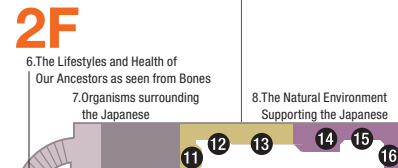
- 1. A Journey of the Japanese**
 - 1 The historical voyage of the Japanese people
- 2. The Beginnings of Human History in the Japanese Islands: Our Late Paleolithic Ancestors**
 - 2 Reading the bones: what sort of people were the Jomon?
 - 3 Jomon lifestyles
- 3. Hunter-gatherers in the Archipelago: the Life Skills of the Jomon People**
 - 2 Reading the bones: what sort of people were the Jomon?
 - 3 Jomon lifestyles
- 4. Yayoi People from the Continent and the New Development of Wet Rice Farming**
 - 4 Reading the bones: what sort of people were the Yayoi?
 - 5 Yayoi lifestyles
- 5. The Formation of the Modern Japanese**
 - 6 Changes in regional populations
 - 7 The Ryukyuan, the mainland Japanese and the Ainu
- 6. The Lifestyles and Health of Our Ancestors as seen from Bones**
 - 8 Stories from bones
 - 9 Recent ancestors
- 7. Organisms Surrounding the Japanese**
 - 10 Influences on the nature
 - 11 Organisms brought into Japan
 - 12 Endangered organisms
 - 13 The organisms bred by the Japanese
- 8. The Natural Environment Supporting the Japanese**
 - 14 The diversity of rice
 - 15 Environmental changes associated with rice cultivation
 - 16 Rice and the development of technology



3F North History of the Japanese Islands

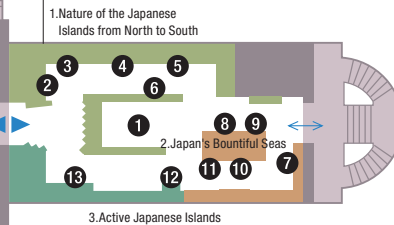


- A Plesiosaur: Futabasaurus**
- 1. The Geological Framework of the Japanese Islands**
 - 1 Continental fragment in the Japanese islands
 - 2 Rock species in accretionary complex
 - 2. Before Formation of the Japanese Archipelago**
 - 3 The oldest-known fossil in Japan
 - 4 Flourishing coral sea
 - 3. Opening of the Sea of Japan and Formation of the Japanese Archipelago**
 - 16 Brachiopods' paradise
 - 17 Paleozoic vegetation
 - 18 An early ichthyosaur: Utatusaurus
 - 19 Using fossils to date layers of rock
 - 20 Mesozoic vegetation
 - 21 Garden of crinoids
 - 22 The first dinosaur discovered in Japan
 - 23 Reef of konbostrea
 - 24 Sea of ammonites
 - 25 An enigmatic fossil - plant or animal trace ?
 - 4. Glacial and Interglacial Ages**
 - 18 Forest of Japanese coal age
 - 19 Before the opening of the sea of Japan
 - 20 Opening of the sea of Japan / sea of Vicarya
 - 21 Metasequoia forest
 - 22 When elephants thrived in Japan
 - 5. Topic Presentations**
 - 23 Fossil chemosynthetic assemblages
 - 24 Fossils of deep sea organisms



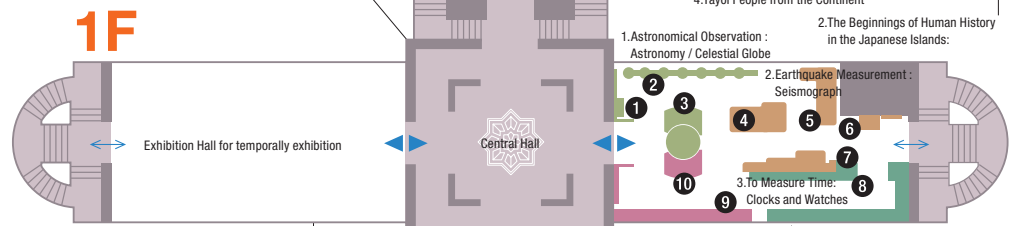
3F South Nature of the Japanese Islands

- 1. Nature of the Japanese Islands from North to South**
 - 1 Nature and seasons of the Japanese islands
 - 2 Subtropical zone
 - 3 Warm temperate zone
 - 4 Cool temperate zone
 - 5 Subarctic zone
 - 6 Japanese mosses, lichens, fungi, slime molds and freshwater fishes
- 2. Japan's Bountiful Seas**
 - 7 Features of the seas around Japan
 - 8 Kuroshio current (temperate zone)
 - 9 Subtropical zone
 - 10 The Japan sea
 - 11 Oyashio current (subarctic zone)
- 3. Active Japanese Islands**
 - 12 Geology of the Japanese islands
 - 13 Plate motion around the Japanese islands
 - 14 Minerals in Japan
 - 15 Meteorites fallen in Japan



1F Central Hall

It is a soaring lobby which has a vaulted ceiling with beautiful stained glasses, Neo-Renaissance architecture that allows you to rest in comfort.



1F North

Exhibition Hall for temporary exhibition

1F South Techniques in Observing Nature

- 1. Astronomical Observation : Astronomy / Celestial Globe**
 - 1 Japanese calendars
 - 2 Celestial and terrestrial globes in Edo period
 - 3 What we have observed with telescopes
- 2. Earthquake Measurement : Seismograph**
 - 4 To read motion of the ground
 - 5 Development of seismographs
 - 6 Evolving seismographs
- 3. To Measure Time: Clocks and Watches**
 - 7 Temporal hours and the Japanese clock, Wadokei
 - 8 Modernization of clock industry
- 4. Tiny Miracles: Microscopes**
 - 9 Scientific ideas inspired by curiosity
 - 10 Challenging the minimum : ultramicroscopes

2F South Organisms of the Japanese Islands

- 1. Evidence of Migration and Speciation**
 - 1 The history of organisms, revealed by DNA
 - 2 Changes revealed by the shapes of birds
 - 3 Marine animals of tropical/subtropical origin
- 2. Plant's Adaptive Strategies for Survival**
 - 4 Plants and geological history
 - 5 Alpine plants: survivors of the Ice ages
 - 6 Plants distributed in unique areas
- 3. Animals Separated by the Sea**
 - 7 How islands' history is indicated by vertebrates
 - 8 Native land snails of the Nansai islands
 - 9 Speciation mechanisms in insects
 - 10 Blakiston line and birds
 - 11 Organisms of the Ogasawara islands
- 4. Adaptation to the Climate**
 - 12 Larger in the north, smaller in the south
 - 13 Living with snow



- Toilets
- Accessible toilets/ Baby changing stations
- Nursing room
- Drinking fountain
- Elevator *Accessible
- Ostmate toilets