List of Dissertation Abstract　(Department of Natural Environment)			
Name	Supervisor	Title	Abstract
Satsuki CHIBA	Kazuyuki HIRATSUKA	Characterization of artificial transcription factors targeted to the Arabidopsis NPR1 gene promoter.	Artificial transcription factors can be applied to plants to control the expression of arbitrary endogenous genes. Therefore, artificial transcription factors are useful for constructing plant-based material production systems and creating high-value-added plants.In order for an artificial transcription factor to function effectively, it is necessary to recruit the transcription factor to an optimal position, but there is still little knowledge about the target sequence. In this study, we aimed to establish a transcriptional regulatory system applicable to various gene promoters, examined target sequences for the Arabidopsis thaliana NPR1 gene, and worked on efficient transcriptional activation.

Yoko ARIMURA	Tomohiko KIKUCHI	Effect of light environment on vertical distribution of phytoplankton mainly diatoms	In this study, we focused on the variation of the optical depth in the ocean and the vertical distribution of diatoms, and aimed to understand the effect of changes in the light environment in water on the vertical distribution of diatoms. This time, 79 species of 32 genera were observed on the Manazuru Peninsula st.M in Sagami Bay. Furthermore, the relationship between the penetration depth and nutrients by genus Diatom was examined. The results suggest that the appearance time, cell number density, and vertical distribution vary depending on the light environment even in an environment where nutrients are sufficiently present.

Rie UCHIDA	Hiroki OIKAWA	A study on the respect for property rights in the Act on Protection of Cultural Properties	The “property rights respect clause” stipulates that property rights must be “respected” in the application of individual acts. The purpose of this study is to examine where the Diet falls in this debate and how it has handled the addition of the property rights respect clause to the Act on Protection of Cultural Properties (APCP). The biggest problem in the discussion of the clause is that it does not take into account how it was added.It should be necessary to review the way in which the law is criticized and refuted before deciding whether the provision that respects property rights should be approved.

Kouhei KANDA	Tatsuo NAKAMURA	Cell selectivity and magnetic hyperthermia effects of Mn-Zn ferrite nanoparticles	Magnetic hyperthermia treatment (MHT) is an attempt to make the cancer treatment by using the magnetic nanoparticles to yield thermal energy in AC magnetic field. Mn0.8Zn0.2Fe2O4 nanoparticles surrounded by highly hydrophilic material of polyethylene glycol (PEG) were prepared by One-pot solvothermal synthesis. For the application of MHT, we modified glucose into nanoparticles surrounded by PEG and examined the thermal effects of nanoparticles in vitro experiments using cancer cells.

Hiroshi KINO	Fumito KOIKE	Vertical distribution of flying arthropods in metropolitan area	Insect flight is an important behavior in life history and has a three-dimensional distribution in horizontal and vertical directions. Investigating the spatial distribution of flying insects at high altitudes is difficult, especially in urban areas. In this study, we investigated three-dimensional insect distribution in urban space in the southern Tokyo metropolitan area. A total of 4437 individuals were collected on the 377 survey days. In order level, Dipteral, and Hymenoptera, Hemiptera, in family level, Chalcidoidea, and Chironomidae, Sciaridae (include Mycetophilidae) were collected. On the first floor of the building, Aleyrodidae were dominant, and the others were dominated by Chalcidoidea, and Chironomidae.

Tomoya KUROSE	Fumito KOIKE	Relationship between walking route with dog and green space	In this study, we focused on "walking dogs" and examined the relationship between the walking route and the green space environment. As a method, a questionnaire was given to people walking dogs in Kanagawa Prefecture, and they filled out their usual walking route. The preference of the environment was quantified by comparing the environment of the walking route with the environment of the surrounding area. As a result, it was found that the open green space environment was more than twice as much favored as the urban area.

Kureha SUZUKI	Akira MORI	The potential roles of alien species on forest restoration: Japanese larch (Larix kaempferi)	The global forest restoration needs to occur in order to enhance biodiversity and carbon sequestration in degraded forests. Alien species are regarded as threats to natural-forest restoration focusing on construction and composition of native tree species. In this study, I evaluated the role of Larix kaempferi, which is a domestic alien species in Hokkaido, on natural-forest restoration within a restoration area in Shiretoko National Park in Hokkaido. I found that this alien species had positive effects on native tree species. L. kaempferi plantations promoted height growth of native species and provided suitable habitats for regeneration of them. These results suggest that alien species could contribute to natural-forest restoration.

Tomoki TAKATORI	Akira MORI	Responses of taxonomic and functional composition of herbaceous plant communities to rainfall changes	One primary goal in community ecology is to identify the community assembly process under changing climate. Here, I examined the response of plant community to the rainfall manipulation at semi-natural grassland in Hokkaido Japan. I collected seven functional traits and evaluated how taxonomic and functional composition related to soil environmental variables. As a result, the soil moisture increased by the irrigation, reducing species evenness and functional redundancy, and increasing functional diversity. These results suggest increased rainfall cause competitive exclusion among similar species of functional traits, decreasing stability of plant community structure and increasing vulnerability to other environmental extreme changes and perturbations.

Hiyori TAKABAYASHI	Shinichi OGATA	Reducing false negative results in an in vitro skin sensitization test : The human cell line activation test	For animal welfare, it is necessary to ban animal experiments related to the cosmetics manufacturing process. In vitro skin sensitization test : human Cell Line Activation Test (h-CLAT) Has been developed, but the issue of false-negative results remains. In this study, expression of CD86 and CD54 was measured using real-time PCR to simplify the evaluation method and shorten the evaluation time. We are investigating the detection of a response that is more sensitive than surface antigens, and aim to improve false-negative results by improving the evaluation sensitivity.
Taiki TACHIBANA	Takehiro SASAKI	Effects of plant diversity on seed production mediated by flower-visiting insects : evidence from a plant removal experiment	Human activities among the world decrease biodiversity, and as a result, the structure of ecosystem is changed. However, the relationship between plant diversity and multitrophic ecosystem functioning is not revealed. Based on these matters, I investigated the relationships between plant diversity, pollination and seed productivity. According to the research in Inner Mongolia, the relationship between plants and pollinators is affected by plant diversity. Moreover, because of this change, seed productivity has been changed.

Mio TOMITA	Kazuyuki HIRATSUKA	Characterization of a novel compound that act on multiple signaling pathways.	Plants are exposed to various kinds of stress every day, and have their own defense mechanism to protect themselves from these. One of these defense mechanisms is Induced Systemic Resistance (ISR). The chemicals that enhance the ISR is called as Plant activator and they are widely noticed by many researchers recent years, however, it takes so much time and they are rarely detected from among enormous amount of materials. We have developed the high-throughput screening system (HTS) using luminescence reporter gene, then, I found some candidates for novel plant activator and their characterization through some tests.

Koretaka NAKATANI	Ryuichi MAJIMA	Sedimentary facies and sedimentary environment of Lower Pleistocene Nojima Formation of the Kazusa Group along Tokyo Bay, Miura Peninsula.	I researched lithography and paleocurrent of the Nojima Formation in the Kaiyama Park, along the Tokyo Bay in northern Miura Peninsula. The thickness of Nojima Formation exposed in Kaiyama Park is 53 m. Lithofacies is composed mainly of muddy sand stone and interbed sandy mud stone, fine ~ course sand stone and conglomarates including shell fragment. Reunion subchronozone, paleomagnetic boundary which is 2.14-2.15 Ma is included in Kaiyama Park. Paleocurrent estimated arrangement sand grain showed north and south. I think that I need to consider that from now on.

Hiroki NAMBA	Hiroyuki MATSUDA	Comparison of macroinvertebrate and fish assemblages in a river receiving mine drainage and uncontaminated river	In this study, we evaluated the ecological impacts of metal pollution by investigating macroinvertebrates and fish fauna in rivers in northern Japan where treated mine wastewater flows. Concentrations of Cu, Zn, Pb, and Cd at downstream pollution sites were 0.1 ~ 1.5 times higher than US EPA water quality standards, with little effect on macroinvertebrates and fish populations. At two contaminated sites 0.8 ~ 3.7 times higher than the water quality standard, statistically significant decreases in the metrics of a few macroinvertebrates communities, such as the richness of mayfly and the abundance of Heptageniidae, were detected, but no significant effects on the abundance and condition factors of 4 dominant fish species, including masu salmon, were detected. These results suggest that richness and abundance of macroinvertebrates in this river are more sensitive to metal contamination than the abundance and condition factors of fishes.

Shiho NISHIZAKA	Akiko SAKAI	Spring leaf phenology variation of Fagus crenata inter and intra individuals relating to vertical foliage position in a forest, snowy region	Spring leaf phenology is important for carbon gain strategy in temperate deciduous forests. In this study, I investigated leafing day of Fagus crenata trees in various sizes, focusing on relative height of shoots in the tree crown and relative height of the tree in the forest. For foliage not affected by snow, smaller trees opened leaves earlier, and flushing day also changed within a crown. For foliage not affected by snow, flashing occurred earlier in taller trees and higher shoots within a crown, and shoots under lower illuminance after F.crenata flushing opened earlier. It was suggested that passive response against snow and strategic response to avoid shading are both drivers of spring leaf phenology, in the beech of snowy region.

Miyu NITTA	Fumito KOIKE	Upper limit of riverside plant distribution	The river has developed gravel riverbanks composed of oligotrophic and gravel soils. In this study, we aimed to clarify the upper limit of the distribution of these plant species. The survey sites are six water systems in Kanagawa Prefecture, and run up from near the mouth of each river,a total of 17 native and 14 non-native species were surveyed at 77 sites where the gravel basin was discovered. From the analysis results, the upper limit of the distribution of the native species is clear, and the upper limit of the alien revegetation species is distributed in rivers with a large water system, and the upper limit is unclear. It was suggested that the distribution could be expanded by planting.

Mayuka MIWA	Shinichi OGATA	A study of AtRad51D gene that will associate sith structural changes in chromosomes of Arabidopsis thaliana	AtRad51D is related to structural changes in chromosomes, and may be a key player in plants immune response. Arabidopsis thaliana is widely used as a model organism in plant biology. This plant has the AtRad51 protein family. This family proteins are related to search for homology and strand pairing stages of DNA homologous recombination. And chromosome structure changes at the same time. AtRad51D is a member of the protein family, and its information is relatively poor. So our big goal is to reveal function of this protein in detail.

Nanami YOSHIOKA	Ryuichi MAJIMA	Molluscan fossils and sedimentary environments of the Lower Pleistocene Nojima formation of the Kazusa Group, exposed along Tokyo Bay of Miura Peninsula	I used Molluscan fossil for estimate the sedimentary environments of the Nojima Formation in the Kaiyama Ryokuchi Park and the Nojima Park, exposed along the Tokyo Bay in the northern Miura Peninsula. The water depth at the time of sedimentation was estimated to be about 50 m in the Kaiyama from the habitat depth of the same species as the present species. In addition, many of the species produced showed cold sea conditions. Nojima Park estimated that the water depth at the ti me of sedimentation was 100-200 m. It is probable that Kaiyama was deeper than Kaiyama to Nojima Park because it was lower than Nojima Park.