BRIEF SUMMARY

The National Institute for Basic Biology, NIBB, is a part of a newly-established research organization, the Okazaki National Research Institutes located on a hill overlooking the old town of Okazaki. The research institute is composed of three independent organizations, National Institute for Basic Biology, National Institute for Physiological Sciences and Institute for Molecular Science.

NIBB is an interuniversity research institute with its own intramural research programs as well as cooperative programs to promote basic biology in Japan. The programs are 1) joint research programs in which university scientists are invited to participate in research projects with the intramural members, 2) facility-sharing programs in which university scientists utilize the institute's research resources, 3) graduate student training programs in which graduate students from universities spend fixed periods of time with the NIBB, and 4) international programs in which foreign scientists are invited to NIBB to conduct research projects.
INTRODUCTION

The National Institute for Basic Biology (NIBB) aims to provide a solid basis for the biological sciences in Japan by promoting research activity on the fundamental mechanisms of life phenomena. Research areas include control mechanisms in reproduction, cell division and differentiation, biological rhythms, photobiology and vision physiology. Analytical approaches range from the molecular to organismic levels of organization.

For many years there has been a serious desire, among Japanese biologists, to have a national research center for biology. The desire materialized in May 1977 when Diet passed a bill to authorize the NIBB in Okazaki, a city close to Nagoya in the center of the Japanese archipelago. At the same time, a sister institute, the National Institute of Physiological Sciences, also a long-awaited, was approved. The two institutes collaborate closely, sharing many important facilities but keeping their own identity.

The NIBB, which is an interuniversity research institute and is still under development, has a two-fold mission: to conduct intramural and cooperative research. The former mission is discharged by the 13 divisions organized into three departments, the Departments of Cell Biology, Developmental Biology, and Biological Regulation. Each division has a full professor and an associate professor and two research associates. Of the 13 divisions, 6 are for adjunct professorships with joint appointment with other institutes in Japan. For the latter mission, the NIBB sponsors joint research programs with participating individuals or research groups throughout Japan.

The NIBB provides research resources to be shared among biologists in Japan as well from abroad. The NIBB sponsors symposia on interdisciplinary and unique research topics by inviting leading scientists from related fields both from within and outside Japan. Thus the NIBB promotes national as well as international scientific advances and exchanges in biology.

Haruo Kanatani, D.Sci.
Director General
National Institute for Basic Biology.
ORGANIZATION OF THE INSTITUTE

Policy and Decision Making
The Director General oversees the operation of the institute assisted by two advisory bodies, the Advisory Council and Steering Council. The Advisory Council is made up of distinguished scholars representing various fields of science and culture and advises the Director General on the basic policy of the institute. The Steering Council is made up of professors of the institute and an equal number of professors from other leading universities in Japan and advises the Director General on the scientific activities, intramural as well as extramural, of the institute. The Council advises on faculty appointments and on the institute's annual budget.

Administration
Administration of the institute is undertaken by the Administration Bureau of the Okazaki National Research Institutes under the direct auspices of the Ministry of Education, Science and Culture. Currently the chief administration officer is Mr. Akira Muroya.

Research
The institute conducts its intramural research programs through three departments organized into 13 divisions. Each division has its own research project and is staffed by a professor, an associate professor and two research associates. A division forms a project team and is expected to be reorganized when a division's project is completed. Half of the divisions are for adjunct professorship and are under professors who hold joint appointment with other universities. The adjunct division has resident research associates. The arrangement aims to facilitate exchange of research activities in Japan.

Technical Department manages the activities of research techniques and help to promote research activities of each division and also to maintain the research resources of the institute. The department undertakes the technical education of its staff.

Research Support Facility
The intramural research support facility of NIBB includes the Large-scale Spectrograph Laboratory, Tissue and Cell Culture Laboratory, Laboratory Computer Facility, Plant Culture Facility, Plant Cell Culture Facility, and Experimental Farm. In addition, seven facilities are operated jointly with the National Institute of Physiological Sciences; they include Radioisotope Facility, Electron Microscope Center, Center for Analytical Instruments, Central Shop, Glassware Cleaning Facility, Animal Care Facility, and Low-Temperature Facility.

Campus
The Okazaki National Research Institutes cover an area of 150,000 sq. m. with four principal buildings. The NIBB's main research building has a floor space of 10,930 sq. m. Two thirds of the space had been completed by 1982 and the remaining third was constructed by June, 1983. The buildings to house research support facility was also completed by June, 1983.
DEPARTMENT OF CELL BIOLOGY

Chairman : Yoshihiko Fujita
The department is formed by two research divisions and three adjunct research divisions and conducts research on the fundamentals of structure and function of cells at molecular level.

Division of Cell Mechanisms

Professor : Tsuneyoshi Kuroiwa
Associate Professor : Toshiyuki Nagata
Research Associate : Shigeyuki Kawano
Kazuo Ogawa

The research in this division aims to study the mechanisms of inheritance and proliferation of semiautonomous organelles mitochondria and chloroplasts through cell biological approaches. The organelles contain spherical or rod-shaped organelle nuclei which are composed of DNA, RNA and proteins, and proliferate in company with organelle-nuclear division. Soon after mating of female and male gametes, the chloroplast nuclei of male origin disappear preferentially while chloroplast nuclei of female origin remain and are transmitted to progeny. Probably this is a cellular mechanism of material inheritance of organelles. Main projects are to clarify the molecular basis of the preferential destruction of chloroplast nuclei as well as of the mitochondria-nuclear division.

Division of Bioenergetics

Professor : Yoshihiko Fujita
Associate Professor : Shigeru Itoh
Research Associate : Mamoru Mimuro
Kaori Ohki

Mechanism of biological energy conversion in photosynthesis has been investigated. Special attention has been paid to the mechanism of light-capturing and energy transfer in the photosynthetic pigment system and the mechanism of energy conversion, from electric to biochemical, in the thylakoid membranes. Molecular architecture and energy flow in phycobilin system of red and blue-green algae are the main targets in the former; mechanism of chromatic adaptation of the pigment system has been also studied. The main focus in the latter is the membrane potential formation driven by electron flow in thylakoid membranes; electron flow mechanism itself has been also studied with special attention to the cytochrome b-f complex.

Division of Cell Fusion (Adjunct)

Professor : Yoshio Okada
Associate Professor : Tsuyoshi Uchida (~Mar. 1983)
Masaru Imaizumi
Research Associate : Masahiro Ishiura
Kenji Kohno

Biology and genetics of cultured mammalian cells including human cells, utilizing cell engineering techniques based on cell fusion phenomenon by HVJ (Sendai virus) and microorganisms or their derivatives are proposed as the research projects for this Division.
Division of Cellular Communication
(Adjunct)
Professor: Yasutomi Nishizuka
Associate Professor: Yoshimi Takai
Research Associate: Kaoru Nishiyama (~Mar. 1983)
Keisuke Hirasawa (July 1983~)
Cellular function and proliferation are frequently activated by interaction of extracellular messengers with specific cell surface receptors, and the mechanism of such activation, particular of transmission of information across the cell membrane has attracted great attention. The main project currently under way in this division is to explore the molecular basis of hormone actions as well as of other cell to cell communication. Along this line an entirely new receptor function has been recently uncovered. The function is independent of cyclic nucleotides but is directly coupled to phosphatidylinositol turnover provoked by various extracellular signals. Calcium, together with diacylglyceride derived from this phospholipid turnover, specifically activates a multifunctional protein kinase which plays roles of crucial importance for controlling a wide variety of cellular activities through protein phosphorylation.

Division of Cell Proliferation (Adjunct)
Professor: Yukio Hiramoto
Associate Professor: Issei Mabuchi
Research Associate: Yasuaki Yoshimoto
The division conducts research on the mechanism of cell division and the cell cycle through physiological, biochemical and morphological approaches. Main projects are to explore mechanisms of the synthesis of proteins and nucleic acids at various stages of cell cycle, the formation of the mitotic apparatus, the movement of chromosomes and the cytokinesis.

DEPARTMENT
OF DEVELOPMENTAL
BIOLOGY
Chairman: Goro Eguchi
The department is composed of three research divisions and one adjunct research division, and conducts research into the cellular and molecular mechanisms of various processes which are involved in developmental phenomena.

Division of Reproductive Biology
Associate Professor: Yoshitaka Nagahama
Research Associate: Hiroko Shirai
Takeo Kishimoto
The division conducts research into two major areas of the reproductive process: (1) the cellular and molecular mechanisms of formation and release of gametes, particularly the hormonal control of oocyte maturation and ovulation, and (2) mechanisms involved in fertilization. These studies combine biochemical, fine structural and physiological approaches.
Research centers around oocyte maturation in starfish. In this invertebrate species a hormonal substance, gonad-stimulating substance (GSS) secreted by the radial nerves, acts on the ovarian follicle cells to produce a second mediator of maturation, maturation-inducing substance (MIS). 1-methyladenine (1-MeAde). 1-MeAde acts on the surface of the
oocytes to induce formation of the third mediator of maturation within the oocytes, maturation-promoting factor (MPF) which brings about germinal vesicle breakdown. Current research is as follows: (1) the characterization and synthesis of GSS, (2) the mechanisms of biosynthesis of 1-MeAde in the ovarian follicle cells, (3) the isolation and identification of the 1-MeAde receptor located on the oocyte surface, (4) the characterization and function of MPF, and (5) fertilization in echinoderms: the role of divalent cations and jelly substances in the acrosome reaction.

In addition, the endocrine control of oocyte vitellogenesis and maturation in teleosts is under investigation. Particular attention has been given to (1) the purification of teleost gonadotropins, (2) the mechanism of gonadotropin action, (3) the identification of teleost MIS, and (4) the role of the different ovarian follicle layers in the production of estrogens and MIS.

Division of Cell Differentiation

Professor: Yoshiaki Suzuki
Associate Professor: Susumu Hirose
Research Associate: Masaki Tsuda
Yoshihide Tsujimoto

The division conducts a research on the molecular basis of cellular differentiation with a special emphasis on regulatory mechanisms of tissue-specific genes. The major targets are fibroin and sercin genes which are expressed at specific stages of development in the posterior and middle portions of silk glands of the silkworm Bombyx mori, respectively. Employing the gene manipulation technology, the members do "in vitro genetics": isolation of the target wild-type genes, preparation of desired mutant genes from the wild-type genes, and in vivo and/or in vitro tests of biological functions for the wild-type and mutant genes. They ultimately hope to understand the regulation machinery of the tissue-specific genes through a reconstructed system which reflects the states of in vivo regulation. For the study of in vivo tests of biological functions, improvements of the introduction of foreign DNAs into living cells are being pursued. They have succeeded in establishing a cell-free transcription system prepared from the silk gland cells. Use of this system has revealed the promoter signal and the transcription enhancement signals of the fibroin gene.

Division of Morphogenesis

Professor: Goro Eguchi
Research Associates: Ryuji Kodama
Kiyokazu Agata

Mechanisms of differentiation and morphogenesis in multicellular organization have been investigated at cellular and molecular levels. The research has been currently focused on the following three projects. (1) The cell culture experimental system of chick embryo pigment epithelial cells (PECs) has been established. This system can produce a multipotential dedifferentiated state of PECs, which is able to redifferentiate to lens cells or pigment cells. By this system environmental factors controlling the transdifferentiation have been analyzed, particularly focusing on the structural and functional changes of cell surface relating to dedifferentiation and redifferentiation of the PEC. The molecular mechanism of specific gene expression has also been analyzed in the same system. (2) The mechanisms of pattern formation and stabilization of two dimensional epithelial tissue structures have been investigated in vivo as well as in vitro experimental systems by computer graphics, electron microscopy, micromanipulation and biochemical techniques. Such approaches
have also been extended to analyze morphogenesis of three-dimensional tissue structures. (3) In addition to these two projects, analysis of cell lineage in early mammalian development has been conducted by means of whole embryo culture technique, which allows a fertilized mouse egg to develop into the somite stages.

Division of Developmental Biology (Adjunct)

DEPARTMENT OF REGULATION BIOLOGY

Chairman: Yoshihiko Fujita (acting)

The department has two divisions and two adjunct divisions and conducts research on the information processing and control mechanisms in biological systems.

Division of Sensory Processing

Professor: Ken-ichi Naka
Associate Professor: Syozo Yasui
Research Associate: Hiroko Sakai
Eiki Hida

The division conducts research on the information processing in the visual system through an interdisciplinary approach which includes traditional morphology and physiology, as well as nonlinear (white-noise) analysis and modelling. The main thrust of research is the functional morphology of the retina of channel catfish, Ictalurus punctatus, and identification of spatio-temporal filtering characteristics of retinal neurons and neuron chains. The 16-year old research was originated at the Calif. Inst. Tech. and carried out at Univ. Texas Medical Branch at Galveston before it was moved to this new institute. The division is also planning to apply the methodology developed in channel catfish to study changes in the functional morphology of developing retinas.

Division of Chronobiology

Associate Professor: Hideaki Nakashima
Research Associate: Takao Kondo

The division aims to clarify the molecular structure and physiological function of the endogenous circadian rhythms (biological clocks). At the moment, the genetic and biochemical analyses of the Neurospora clock which controls the conidiation rhythm and physiological and biochemical studies of the duckweed (Lemna gibba and L. paucicostata) clock as related with the potassium uptake rhythm are the two major themes of research.

Division of Biological Regulation (Adjunct)

Professor: Masaki Furuya
Associate Professor: Yasuhiro Miyoshi
Research Associate: Kotaro Yamamoto
Satoru Tokutomi

The research in this division aims to study the regulatory mechanisms of biological functions at molecular and subcellular levels. The research programs proposed and being carried out at present center around the early changes induced by environmental stimuli: first, physical and chemical characterization of phytochrome, a photoreversible chromoprotein that mediates plant development; second, the
primary action of photoreceptors regulating functions of biological membranes; third, identification of chemically unknown pigments such as the blue and near-ultraviolet light absorbing pigment that control several photobiological processes, a green light absorbing pigment controlling phototaxis, and others which have been, and will be indicated in the results obtained with the LARGE SPECTROGRAPH here.

Division of Behaviour and Neurobiology (Adjunct)
Professor: Keiichi Mimura
Associate Professor: Tateo Shimozawa
Research Associate: Teiichi Tanimura

The division conducts research on the invertebrate behaviour through neurobiological approach which includes electrophysiology, morphology, and behavioural and genetic analysis. The division attempts to progress our researches through the following three ways. First, insect vision, especially neuronal mechanisms of the fly visual system, are investigated by electrophysiological, morphological, biochemical and behavioral methods. The second project intends to reveal the molecular mechanisms of taste in the fruit fly, *Drosophila melanogaster*, employing genetic methods. The approach includes electrophysiological and biochemical analyses of various mutants in sugar responses. The neural mechanisms underlying feeding behaviour is also a subject for study. Third, neuronal networks responsible for the generation of motor programs — e.g. righting behaviour, stridulation, and locomotion of crickets are interested. Particularly, analysis of the mechanisms involved in the selective recruitment of motorneurons is intended by means of microelectrodes, intracellular dye tracers and electron microscopy.
RESEARCH RESOURCE

There are four categories of research support facilities available to the intramural as well as to the visiting biological scientists: 1) Campus-wide facilities (CENTRAL COMPUTING CENTER and LIBRARY), 2) NIBB's own research support facilities (RESEARCH SUPPORT FACILITY, intramural), 3) facilities jointly maintained by the NIPS and the NIBB but managed either by the NIPS (ANIMAL-CARE FACILITY) or by the NIBB (RADIOISOTOPE FACILITY), 4) facilities jointly run by NIPS and NIBB (CENTER for ANALYTICAL INSTRUMENTS, ELECTRON MICROSCOPE CENTER, GLASSWARE CLEANING FACILITY, SHOP and LOW-TEMPERATURE FACILITY).
Experimental farm: This facility consists of 220 sq.m. glass-houses with precision temperature and humidity control, a limited farm, a large (88-sq.m.) and a small (45-sq.m.) green house with automatic sprinklers and window control, two (30- and 50-ton) open aquariums and several smaller tanks. The facility also includes a building with office, storage and work-space.

Plant Cell Culture Facility: Autotrophic and heterotrophic culture devices are equipped for experimental cultures of plant and microbial cells.

**RESEARCH FACILITIES**

**RADIOISOTOPE FACILITIES**

(managed by NIBB)

Head of Facility: Yoshiaki Suzuki
Faculty: Kohji Hasunuma

The facility is composed of a center and two subcenters, one in NIBB and other in NIPS. The facility is being used for molecular analyses of eukaryotes. At the center a variety of radioisotopes such as $^{22}$Na, $^{125}$I, $^{32}$P, $^3$H and $^{14}$C are handled as well as various species of gamma-ray emitting nucleides. A P3-level laboratory for recombinant DNA research is included in the center facilities. At the substations, only a limited variety of radioisotopes such as $^3$H, $^{14}$C and $^{32}$P are processed. The substation in NIBB is equipped with a P2-level recombinant DNA research laboratory. The members of the Radioisotope Facility maintain and control the centers, and give users an appropriate guidance for radioisotope handling. The facility members conduct also their own research on the analysis of meiosis in *Neutospora crassa* using many isolated mutants with meiotic nondisjunction. The goal of the research is to isolate and characterize the genes for the regulation of meiosis with DNA recombination techniques.

**ANIMAL-CARE FACILITIES**

(managed by NIPS)

Vivarium: This is a 2,000-sq.m. building for (admitting and maintaining) land animals, including insects. Operations and experiments of a limited scope may be performed in the vivarium.

Aquarium: This is a 600-sq.m. facility for both fresh- and sea-water animals. There are 10 ten-ton and 31.5-ton tanks in addition to one seven-ton and one two-ton circular tanks. All tanks are individually temperature controlled and are supplied either with deionized water or seawater. There is a lorry with a one-ton temperature-controlled tank to transport aquatic animals and plant.

**RESEARCH FACILITIES RUN JOINTLY WITH THE NIPS**

**ELECTRON MICROSCOPE CENTER**

This facility maintains the following microscopes for the use of intramural members as well as researchers from other universities and research institutions.

Transmission microscope: Hitachi H-500 125KV, JOEL 100-CX and 200-CX 100 and 200KV, and Philips EM-400HM 120KV.

Transmission scope, analytical: JOEL 200-CX, 200KV.

Scanning scope: Hitachi S-450 25KV.
The Center for Analytical Instruments consists of the following five sections. (1) Chemical analysis. (2) Preparation of Biological Materials. (3) Spectroscopic analysis. (4) Physical analysis, and (5) Microscopic analysis. Each section is equipped with instruments for general use as listed below.

<table>
<thead>
<tr>
<th>Section for Chemical Analysis</th>
<th>Amino Acid Analyzer</th>
<th>HPLC</th>
<th>Peptide Sequence Analyzer</th>
<th>Peptide Synthesizer</th>
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<tr>
<td></td>
<td>HITACHI 835</td>
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<td>JASCO TRIROTAR III</td>
<td>BECKMAN 990C</td>
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<tr>
<th>Section for Preparation of Biological Materials</th>
<th>Coulter Counter</th>
<th>Isotachophoresis System</th>
<th>Preparative Ultracentrifuge</th>
<th>Two Parameter Cell Sorter</th>
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<td></td>
<td>COULTER ZB</td>
<td>LKB 2127 TACHOPHOR</td>
<td>BECKMAN L8-80</td>
<td>BECTON-DICKINSON FACS-II</td>
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<tr>
<th>Section for Spectroscopic Analysis</th>
<th>Atomic Absorption</th>
<th>Spectrophotometer</th>
<th>Differential Refractometer</th>
<th>Dual-wavelength Spectrophotometer</th>
<th>Infrared Spectrophotometer</th>
<th>Laser-Raman</th>
<th>Spectrophotometer</th>
<th>Light Scattering Photometer</th>
<th>Spectrofluorometer</th>
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<td>PERKIN-ELMER 603</td>
<td>CHROMATIX KMX-16</td>
<td>HITACHI 557</td>
<td>JASCO A-302</td>
<td></td>
<td>JASCO R-800</td>
<td>CHROMATIX KMX-6DC</td>
<td>HITACHI MPF-4</td>
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<tr>
<th>Section for Physical Analysis</th>
<th>Analytical Ultracentrifuge</th>
<th>Differential Scanning</th>
<th>EPR Spectrometer</th>
<th>GC Mass Spectrometer</th>
<th>Superconductive FT-NMR Spectrometer</th>
<th>Viscometer</th>
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<td></td>
<td>HITACHI 282</td>
<td>PERKIN-ELMER DSC-2</td>
<td>BRUKER ER 200D</td>
<td>HITACHI M-80</td>
<td>BRUKER WM 360 wb</td>
<td>CONTRAVES RM-30</td>
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<tr>
<th>Section for Microscopic Analysis</th>
<th>2-Dimension Microdensitometer</th>
<th>Film Data Analysis System</th>
<th>Image Analyzer</th>
<th>Interactive Image Analyzer</th>
<th>Microscope Photometer</th>
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<td></td>
<td>JOYCE LOEBL 3CS</td>
<td>NAC MOVIAS GP-2000</td>
<td>KONTRON MOP-AM03</td>
<td>KONTRON IBAS-I.II</td>
<td>CARL ZEISS MPM 03-FL</td>
</tr>
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COOPERATIVE RESEARCH ACTIVITIES

The NIBB sponsors four cooperative research activities.

Individual and group cooperative research program: Scientists from other Japanese universities and research institutes are invited to undertake joint research projects with the intramural members. Limited funds are available for travel and expenditures related to the projects.

Research conferences: The NIBB sponsors research conference on important subjects in biology. Ten to twenty scientists are invited and intense discussion is held for two to three days. The NIBB provides financial support for the participants. Conferences may be initiated by scientists with other institutes or by intramural members.

Facility-sharing program: Scientists with other universities are entitled to the use of specified instruments maintained by the NIBB. No financial support is available except for the Large Scale Spectrograph whose user is provided with limited financial support.

Graduate student programs: Graduate students with other universities may spend a fixed period of time with members of NIBB. This allows students to have experience with the very modern facility of NIBB. The NIBB, however, does not have its own graduate program.
LIBRARY

The three institutes of the Okazaki National Research Institutes share a common library facility. The library is a part of the main administration building and has a floor space of about 2,478 sq.m.

The library has a stock of 9,350 books in Japanese and 30,050 in foreign languages and subscribes to 237 Japanese and 446 foreign journals. Lending records, inventory, and literature searches are computerized. The library is open 24 hrs every day.

LODGING FACILITY

The Okazaki National Research Institutes maintain two lodging facilities, one Mishima Lodge and the other Yamate Lodge. Mishima Lodge is a few minute walk away; Yamate Lodge is less than 20 minutes. The lodges are for scientists and their families staying for fixed periods of time with the institutes. Some suites and bungalows are provided with kitchenette facilities. A modest charge is levied to help to maintain the facilities.

Mishima Lodge has 27 single rooms, 3 suites and 6 bungalows for large families. Yamate Lodge has 11 single rooms, 4 suites and 2 family complexes.

On the campus there is a dining facility which is open Monday through Saturday.
THE CITY

The city of Okazaki, incorporated in 1916, is located 30 kilometers southwest of Nagoya, the fourth largest city in Japan. A high-speed urban train connects the two cities.

Okazaki, with a population of 275,000, is a typical medium-size city in Japan and offers the convenience of urban life while avoiding the disadvantages of a large city. Okazaki is the commercial as well as cultural center of the Mikawa (Three River) district with its rich historical heritage. Ieyasu Tokugawa, the first Tokugawa Shogun, was born here in 1542 and built a castle here. The original parapets and moats and the rebuilt castle still dominate the city as they did 500 years ago. When he established the Shogunate in Edo (the former name of Tokyo) in 1603, Ieyasu took a large contingent of Mikawa Bushi (Mikawa Samurai or professional warriors) with him. Those Mikawa Bushi formed the nucleus of Ieyasu’s new administration.

Within a radius of 10 kilometers from the city center are located Mitsubishi Motor’s Okazaki Plant, Toyota Motor’s main production facilities in Toyota City, and Sony’s ultra-modern Koda plant which produces video tape recorders.

TRANSPORTATION

BY TRAIN

From Tokyo to Toyo-hashi: Two and half hrs by the Japan National Railway’s (JNR) super train (KODAMA or ECHO). The train runs every 30 min.

From Toyo-hashi to Okazaki: Twenty five minutes by the Mei-tetsu (Nagoya Railway) express. Mei-tetsu’s station in Okazaki is Higashi (or East)—Okazaki. The train runs every 20 to 30 min. This is the most convenient route to come to Okazaki from Tokyo.

From Tokyo to Nagoya: Two hrs by the JNR’s super train (HIKARI or LIGHTENING). The train runs every 30 min.

From Kyoto/Osaka to Nagoya: One to two hrs by the JNR’s super train (HIKARI/KODAMA). Kin-tetsu (Kinki Nippon Railway) also serves between Osaka/Nara and Nagoya.

From Nagoya to Okazaki: Thirty five minutes by the Mei-tetsu express which runs every 20 min. Mei-tetsu’s station in Okazaki is Higashi (or East)—Okazaki.

BY AIR

Domestic airlines serve Komaki, Nagoya, airport which is 1 hr. drive from Okazaki.

WEATHER

In Okazaki, temperature goes up to 30 degree centigrade in the summer and down to a few degrees above the freezing point in the winter. May to June is the rainy season and the spring (March to May) and fall (September to November) are most pleasant.
THE OKAZAKI CASTLE,
THE HOME OF THE FIRST
TOKUGAWA SHOGUN, IYEASU.
**DIRECTOR GENERAL**


**PROFESSORS**


TSUNEYOSHI KUROIWA. Division of Cell Mechanism, B. Sci (zoology, Tokyo Metropolitan Univ.), M. Sci & D. Sci (botany, Univ. Tokyo), Staff Member, Tokyo Metropolitan Isotope Research Center (1970–72), Associate Professor, Okayama Univ. (1972–77), Associate Professor, NIBB (1977–82), Professor, NIBB (1983– ).

KEICHI MIMURA. Division of Behaviour and Neurobiology, B. Sci (psychology, Tokyo Bunrika (Literature and Science) Univ.), M. D. (psychology, Nagasaki Univ.), Research Associate, Northwestern Univ. (1959–60). Research Fellow, Department of Neurobiology, Research School of Biological Sciences, Australian National Univ. (1973–75). Professor, Faculty of Liberal Arts, Nagasaki Univ. (1970– ), Adjunct Professor, NIBB (1979– ).


YASUTOMI NISHIZUKA. Division of Cellular Communication, M. D. (Kyoto Univ. School of Medicine), Ph. D. (biochemistry, Kyoto Univ. Graduate Course), Research Associate, Kyoto Univ. School of Medicine (1962–64), Associate Professor, Kyoto Univ. School of Medicine, Dept. of Med. Chem. (1964–68). Guest Investigator, Rockefeller Univ. (1964–65). Professor, Kobe Univ. School of Medicine, Dept. of Biochem. (1969– ). Adjunct Professor, NIBB (1980– ).


ASSOCIATE PROFESSORS


RESEARCH ASSOCIATES

KIYOKAZU AGATA. Division of Morphogenesis, B. Sci. & M. Sci. (biophysics, Kyushu Univ.). Research Associate, NIBB (1983—).

YOSHIKO HAMADA. Division of Cell Culture and Microbiology Laboratory B. Sci. (biology, Osaka Univ.). M. Sci. & D. Sci. (biophysics, Kyoto Univ.). Research Associate, NIBB (1979—).

EIKI HIDA. Division of Sensory Processing, B. Sci. (mathematics, Nagoya Univ.) M. Sci. (biophysical engineering, Osaka Univ.). Research Associate, NIBB (1979—).


FOREIGN VISITING SCIENTISTS

Sponsored by the Mombusho

RICHARD D. COPENHAGEN, Division of Sensory Processing, B. Sci. (electrical engineering, Stanford University), M. Sci. Ph. D. (computer science, University of California), Associate Professor, University of California, San Francisco, NIBB (April 15—September 14, 1983 and December 1—28, 1983).

Sponsored by JSPS

CHARLES W. WALKER, Division of Reproductive Biology, B. Sci., (zoology, Miami University), M. Sci. Ph. D. (zoology, Cornell University), Associate Professor, University of New Hampshire, NIBB (July 1, 1983— ).

RESEARCH FELLOWS

The Institute Research Fellows

KATSUMI MATSUURA, Division of Bioenergetics, B. Sci. (photobiology, Tokyo Metropolitan University), M. Sci., D. Sci. (photobiology, Kyushu University), Lecturer, NIBB (April 1, 1983— ).

MASATOSHI MITA, Division of Reproductive Biology, B. Sci., M. Sci., D. Sci. (biology, Waseda University), Lecturer, NIBB (April 1, 1983— ).

JSPS Research Fellows

HIROSHI HOSOKAWA, Division of Sensory Processing, B. Sci., M. Sci., D. Sci. (bioengineering, Osaka University), Postdoctoral Fellow, NIBB (April 1, 1983— ).

SHIN-ICHI HISANAGA, Division of Reproductive Biology, B. Sci., M. Sci., D. Sci. (zoology, University of Tokyo), Postdoctoral Fellow, NIBB (April 1, 1983— ).

TECHNICAL DEPARTMENT STAFF

Office

HACHIRO HONDA, (Aichi Agricultural Junior College), Technical Staff, Nagoya Univ (1953—78), Manager, Technical Department, NIBB (1978— ).

Common Facility Group

YUICHIRO ANDO, Laboratory Computer Facility, B. Sci. (information science, Fukui Univ.), Technical Staff, NIBB (1980— ).
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