Appendix

Research outline

(Updated: September 1st,2014)

Department	Division	Faculty	Ext.	Research outline
Molecular Genetics	Molecular Genetics	**FUKAGAWA, Tatsuo** / Professor **HORI, Tetsuya** / Assistant Professor **NISHINO, Tatsuya** / Assistant Professor	6792 6744 6744	Molecular genetic, cell biological, biochemical, and structure biological methods are employed to study the mechanism for chromosome segregation during cell division.
	Mutagenesis			
	Molecular Mechanisms	**SEINO, Hiroaki** / Assistant Professor	6745	I am studying molecular mechanisms of cell cycle regulation in fission yeast by genetic and biochemical approaches.
Cell Genetics	Cytogenetics	**KOBAYASHI, Takehiko** / Professor **IIDA, Tetsushi** / Assistant Professor **AKAMATSU, Yufuko** / Assistant Professor	6881 6882 6883	Relationship between genome instability (especially, of repetitive sequences) and cellular functions is studied.
	Microbial Genetics	**ARAKI, Hiroyuki** / Professor **TANAKA, Seiji** / Assistant Professor **HIZUME Kohji** / Assistant Professor	6754 6758 6757	Genetic and biochemical approach to elucidate molecular mechanism and regulation of eukaryotic DNA replication and checkpoint control using budding yeast
Developmental Genetics	Developmental Genetics	**HAYASHI, Takashi** / Assistant Professor	6811	Developmental genetics of organogenesis in Drosophila.
	Neurogenetics	**IWASATO, Takuji** / Professor **MIZUNO, Hidenobu** / Assistant Professor	6773 6777	We are studying molecular and cellular mechanisms of neuronal circuit development in the mammals, using mouse genetics and other related methods.
	Molecular and Developmental Biology	**KAWAKAMI, Koichi** / Professor **ASAKAWA, Kazuhide** / Assistant Professor **MUTO, Akira** / Assistant Professor	6740 6739 6739	Genetic studies on development, morphogenesis and behaviors by using a model vertebrate zebrafish.
Population Genetics	Population Genetics	**SAITOU, Naruya** / Professor **JINAM, Timothy** / Assistant Professor	6790 6787	We study evolution of genes and genomes, in particular human evolution. We also develop methods for study of genome evolution.
	Evolutionary Genetics	**AKASHI, Hiroshi** / Professor **OSADA, Naoki** / Assistant Professor	6793 5820	Mechanisms of genome evolution. Especially weak selection and biosynthetic constraints.

Integrated Genetics	Human Genetics	**INOUE, Ituro** /Professor **HOSOMICHI, Kazuyoshi** / Assistant Professor	6795 6797	Medical genomic study using high-throughput sequencing data is a promising procedure to create an innovate healthcare system and open a new aspect of population genetics.
	Agricultural Genetics	**KAKUTANI, Tetsuji** / Professor **TARUTANI, Yoshiaki** / Assistant Professor **INAGAKI, Soichi** / Assistant Professor	6801 6807 6807	Control and function of epigenetic gene modifications in Arabidopsis.
	Brain Function	**HIRATA, Tatsumi** / Professor **KAWASAKI, Takahiko** / Assistant Professor	6721 6721	Development of the vertebrate nervous system with special focus on neuronal network formation.
Center for Frontier Research	Molecular Function	**KANEMAKI, Masato** / Associate Professor	5830	We aim to understand the mechanism of chromosome replication and the cell cycle regulation in animal cells by analyzing conditional cell lines using molecular genetic and cell biological methods. We also develop techniques for the construction of cell lines required for the studies of animal cells.
	Motor Neural Circuit	**HIRATA, Hiromi** / Associate Professor	5825	Genetic and physiological analysis on motor development by using a vertebrate model zebrafish. Specific aim is to understand and regulate intrinsic and acquired synaptogenesis, circuit formation and muscle development.
	Symbiosis and Cell Evolution	**MIYAGISHIMA, Shin-ya** / Project Associate Professor	9411	In order to understand endosymbiotic evolution of eukaryotes, we are studying coordinating mechanisms of eukaryotic cell and organelle/endosymbiont proliferation using algae, plants, and protists.
	Ecological Genetics	**KITANO, Jun** / Project Associate Professor	9415	We use threespine stickleback fishes to investigate the genetic and molecular mechanisms underlying adaptation and speciation.
	Centrosome Biology	**KITAGAWA, Daiju** / Project Associate Professor	5828	We mainly focus on understanding the mechanisms of centrosome duplication by using the combination of innovative and multi-disciplinary approaches. We are utilizing *C. elegans* embryos and human cell culture as model systems.
	Cell Dynamics and Organization	**ODA, Yoshihisa** / Associate Professor	6800	To understand the mechanism underlying plant cell wall patterning, we study the dynamic behavior of cortical cytoskeletons and small GTPases in xylem cells.

	Quantitative Mechanobiology	**SHIMAMOTO, Yuta** / Associate Professor	6784	Our laboratory studies mechanisms of force-based regulation in the mitotic spindle and the cell nucleus. Using our expertise of controlled mechanical manipulation and high-resolution fluorescence imaging, the micro-mechanics of these intracellular structures, assembled in Xenopus egg extracts, are quantitatively analyzed.
Genetic Strains Research Center	**Mammalian Genetics**	**SHIROISHI, Toshihiko** / Professor **TAKADA, Toyoyuki** / Assistant Professor **AMANO,Takanori** / Assistant Professor	6818 6820 6816	In order to understand genetic regulation of complex traits, such as morphogenesis and energy metabolism, we are conducting genetic analyses using mouse spontaneous mutants (variants) and genetically modified mutants.
	Mammalian Development	**SAGA, Yumiko** / Professor **KATO, Yuzuru** / Assistant Professor **AJIMA, Rieko** / Assistant Professor	6829 6832 6832	We study the early developmental events and the regulatory mechanisms during mouse embryogenesis through generation and analyses of gene-knockout and transgenic mice. We are especially interested in the organs derived from mesoderm (heart, lung, somite), and the germ cell system.
	Mouse Genomics Resource	**KOIDE, Tsuyoshi** / Associate Professor	5843	For understanding genetic basis of behavioral diversity, behavioral and genetic analyses are applied on a variety of mouse resources including wild-derived strains.
	Model Fish Genomics Resource	**SAKAI, Noriyoshi** / Associate Professor	5848	We establish reliable protocols for genetically modification of zebarafish using sperm, and analyze the molecular mechanisms of spermatogenesis and early development in zebrafish.
	Plant Genetics	**KURATA, Nori** / Professor **KUBO, Takahiko** / Assistant Professor	6808 6802	We perform analyses of genetic programs of reproductive and embryonic developmental process, as well as studies on the mechanism of reproductive isolation in rice. Wild species resources of rice are also used for evolutionary and diversity studies.
	Microbial Genetics	**NIKI, Hironori** / Professor **AOKI, Keita** /Assistant Professor	6870 6827	We investigate higher order structure of chromosomes and their dynamics in yeast and bacteria through genetic and cell biological analysis.
	Invertebrate Genetics	**UEDA, Ryu** / Professor **KONDO, Syu** / Assistant Professor	6823 6824	Genome-wide RNAi mutant fly library is established to study genome function in a variety of biological traits of fly development.

	Genetic Informatics	**YAMAZAKI, Yukiko** /Associate Professor	6885	As the information center of the genetic resources, we have been constructing databases and continuously inventing better way to distribute data in order to utilize the resources to its fullest potential.
	Genome Biology	**KOHARA,Yuji** / Project Professor **ANDACHI, Yoshiki** / Assistant Professor	6854 6860	We are performing a systematic analysis of expression and function of the genome of the nematode C.elegans, aiming at understanding of the gene network for development.
Structural Biology Center	**Biological Macromolecules**	**MAESHIMA, Kazuhiro** / Professor **IDE, Satoru /** Assistant Professor	6864 6878	Our research interest lies in determining how a long string of genomic DNA is three-dimensionally organized in mitotic chromosomes and the nucleus, and how the organized genome functions during cellular proliferation, differentiation, and development. We are using a novel combination of molecular cell biology and biophysics to elucidate 3D-organization and dynamics of human genome chromatin.
	Cell Architecture	**KIMURA, Akatsuki** / Associate Professor **KIMURA, Kenji** / Assistant Professor	5854 5854	To understand the three-dimensional architecture of the cell and its dynamics, quantitative imaging and modeling approaches are employed. Specific targets of the research are size and shape of organelles, the mechanics of cytokinesis, and cytoplasmic streaming in *C. elegans* embryo.
	Multicellular Organization	**SAWA, Hitoshi** / Professor **IHARA, Shinji** / Assistant Professor	6845 6844	We are studying the mechanisms that produce a variety of cell types through asymmetric cell divisions using the nematode *C.elegans*.
	Biomolecular Structure	**SHIRAKIHARA, Yasuo** / Associate Professor **ITO, Hiroshi** / Assistant Professor	6887 6862	We determine the three dimensional atomic structure of proteins, nucleic acids or their complexes by x-ray diffraction analysis in order to understand the working mechanism of the targets.
	Gene Network	**SUZUKI, Emiko** / Associate Professor **TAMORI, Yoichiro /** Assistant Professor	6812 6813	Combinations of molecular genetics of Drosophila and high-resolution light and electron microscopy are employed to study functional implication of structural and molecular organization of neuronal cells, with particular focus on neuronal network formation.

Center for Information Biology	DNA Data Analysis	**IKEO, Kazuho** / Associate Professor **NOZAWA, Masafumi** / Assistant Professor	6851 6852	Evolutionary study of genomic structure and gene expression pattern of animals to elucidate the evolutionary mechanism of central nervous system and sensory organs. Evolutionary genomics analysis of various species such as *Drosophila* and viruses. Aquatic metagenome analysis. Developing databases and computer software for biological research.
	Biological Networks	**ARITA, Masanori** / Professor	9449	Network analysis of metabolic pathways based on comprehensive identification and quantification of metabolites (metabolomics); Bioinformatics related to plant secondary metabolism and lipid metabolism
	Genome Informatics	**NAKAMURA, Yasukazu** / Professor **KAMINUMA, Eli** / Assistant Professor	6859 6859	Intelligent information technology for structural and functional annotations of large-scale nucleotide sequences.
	Research and Development of Biological Databases	**TAKAGI, Toshihisa** / Professor	5821	Studies on applying distributed database software technology and/or parallel-distributed computing software technology to huge Life Science Databases such as DDBJ. Studies on analyzing biological data with using Supercomputer.
	Gene- Expression Analysis	**OKUBO, Kousaku** / Professor **OGASAWARA, Osamu** / Assistant Professor	5838 9450	Representation of Bio Medical knowledge Analysis of gene expression data and construction of integrated databases, construction of a database of data analysis methods, and construction of theoretical models of gene expression evolution
	Comparative Genomics	**FUJIYAMA, Asao** / Professor **TOYODA, Atsushi** / Project Associate Professor	6788 6788	We have been conducting advanced genomics research on the plasticity of genome structure and functions using most advanced genome technology such as New-Generation Sequencers.
Experimental Farm		**NONOMURA, Ken-ichi** / Associate Professor	6872	We aim to elucidate the regulatory system of plant germ-cell development and chromosome kinetics, mainly using seed-sterile rice mutants.
Center for Advanced Genomics		**NOGUCHI, Hideki** / Associate Professor	9459	Development of new algorithms for *de novo* sequence assemblies, and analytical tools for comparative genomics employing massive data produced from next generation sequencers.