

## Organization

### Cancer Institute Hospital

- |                           |  |                                     |
|---------------------------|--|-------------------------------------|
| • Thoracic Center         | • Medical Oncology                         | • Dentistry                         |
| • Gastroenterology Center | • Sarcoma Center                           | • Palliative Care & Pain Management |
| • Breast Oncology Center  | • General Medicine                         | • Radiation Oncology                |
| • Gynecologic Oncology    | • Anesthesiology/Pain Service              | • Diagnostic Imaging Center         |
| • Head and Neck Oncology  | • Plastic and Reconstructive Surgery       | • Endoscopy                         |
| • Orthopedic Oncology     | • Ophthalmology                            | • Comprehensive Medical Oncology    |
| • Genitourinary Oncology  | • Infectious Diseases                      | • Clinical Genetic Oncology         |
| • Hematology Oncology     | • KAMPO Support (Japanese Herbal Medicine) |                                     |

### Cancer Institute

- |                          |                       |   |
|--------------------------|-----------------------|---|
| • Pathology              | • Radiation Physics   | • Cancer Genomics                         |
| • Experimental Pathology | • Genetic Diagnosis   | • Pathology Project for Molecular Targets |
| • Cell Biology           | • Carcinogenesis      |   |
| • Cancer Biology         | • Protein Engineering |   |

### Cancer Chemotherapy Center

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|-----------------------------|-------------------------|
| • Experimental Chemotherapy | • Genome Research       |
| • Molecular Pharmacology    | • Clinical Chemotherapy |
| • Molecular Biotherapy      |                         |

### Genome Center

- Project for Development of Genomics-based Cancer Medicine
- Project for Development of Innovative Research on Cancer Therapeutics
- Project for Realization of Personalized Cancer Medicine

## Financial Data

### Financial Summary

	Millions of yen	
	FY2013	FY2014
Total Revenue	33,811	35,817
Total Expenditure	31,479	34,312
<b>Net Assets</b>	<b>2,332</b>	<b>1,505</b>

### Grants and Philanthropy

	Millions of yen	
	FY2013	FY2014
Grants	344	342
Philanthropy	1,048	1,037
<b>Total</b>	<b>1,392</b>	<b>1,379</b>

Notes: FY2013 (ended March 31, 2014); FY2014 (ended March 31, 2015)  
As fractions were rounded up, the sum of the figures may not equal totals.

## General Information

Beds	
General ward	665
ICU	10
Palliative care ward	25
<b>Total</b>	<b>700</b>

Staff (as of April 1, 2015)	
Doctors	320
Nurses	734
Medical Technologists	380
Administration and others	200
<b>Total</b>	<b>1,634</b>

## Research

Academic Papers Published	
English	227
Japanese	255
<b>Total</b>	<b>482</b>

## Patient Care (FY2014 ended March 31, 2015)

Outpatients	
Annual total outpatients	400,615
Daily average	1,642
Ambulatory Therapy Center	30,115

Inpatients	
Annual total inpatients	218,190
Daily average	598
Actual patients	10,430
Bed occupancy rate (%)	85.4
Average length of stay (day)	13.0

Surgeries	
Annual total	7,771
Surgery hours (total)	29,971

<b>Radiation Therapy (cases)</b>	<b>38,395</b>
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<b>Ultrasound Examinations</b>	<b>57,992</b>
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<b>Image Diagnoses</b>	<b>219,711</b>
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Pathological Diagnoses	
Total	25,273
Frozen diagnosis	4,145

Endoscopy	
Examinations	25,751
Treatments	2,938

**Original Publications:** 99 papers (2014), 76 papers (2013)

## Research Groups

	Groups	Staff Scientists and Assistants	Students
Cancer Institute	10	146	52
Cancer Chemotherapy Center	5	51	47
Genome Center	3	17	2

## Featured Articles

**Title** Ewing's sarcoma precursors are highly enriched in embryonic osteochondrogenic progenitors. *J Clin Invest* (2014) 124: 3061-74.

**Authors** Miwa Tanaka, Yukari Yamazaki, Yohei Kanno, Katsuhide Igarashi, Ken-ichi Aisaki, Jun Kanno, Takuro Nakamura

**Summary** Ewing's sarcoma is a highly malignant bone tumor found in children and adolescents, and the origin of this malignancy is not well understood. Here, we show that introduction of EWS-ETS fusion genes into osteochondrogenic progenitors derived from the embryonic superficial zone (eSZ) of murine long bones at late gestation efficiently induces Ewing's sarcomas. EWS-ETS downstream genes were quite active in eSZ cells, where the chromatin structure of the ETS-responsive loci was open. Inhibition of  $\beta$ -catenin, PARP1, or EZH2 suppressed cell growth in a murine model of Ewing's sarcoma, suggesting the utility of the current system as a pre-clinical model.

**Title** TRIB1 supports prostate tumorigenesis and tumor-propagating cell survival by regulation of endoplasmic reticulum chaperone expression. (*Cancer Res.* 74:4888-97, 2014)

**Authors** Mashima T, Soma-Nagae T, Migita T, Kinoshita R, Iwamoto A, Yuasa T, Yonese J, Ishikawa Y, Seimiya H.

**Summary** Tumor tissues consist of heterogeneous cancer cells and, among them, minor subsets of cancer stem-like cells with highly tumorigenic potential exist and are involved in cancer recurrence. Here, employing functional genomics and comprehensive transcriptomic analyses, we identified TRIB1 as a critical factor that supports the cancer stem-like cell survival and tumorigenic potential of prostate cancer. Our finding provides an important clue to find new strategy to eradicate cancer stem cells in prostate cancer.

## Awards

Seiji Sakata Pathology Project for Molecular Targets of the Cancer Institute  
Oral speech of excellent paper (The 54th Annual Meeting of the Japanese Society for Lymphoreticular Tissue Research); June, 2014

Kana Sakamoto Pathology Project for Molecular Targets of the Cancer Institute  
Excellent Paper (The 54th Annual Meeting of the Japanese Society for Lymphoreticular Tissue Research); June, 2014

Miwa Tanaka Division of Carcinogenesis of the Cancer Institute  
Best Presentation Awards (11th JSP Conference for Investigative Pathology); August, 2014

Eiji Hara Division of Cancer Biology of the Cancer Institute  
The JCA-Mauverny Award (The 73rd Annual Meeting of the Japanese Cancer Association); September, 2014

Kiyohiko Hatake Division of Clinical Chemotherapy of the Cancer Chemotherapy Center  
Savchuk Award (25th International Congress on Anti-Cancer Treatment); February 5, 2014

Yuichi Matsumoto Division of Molecular Biotherapy of the Cancer Chemotherapy Center  
Excellent Young Scientist Oral Presentation Honorable Mention; July 15, 2014

## Seminars

Date	Speaker	Affiliation	Title
<b>Seminars</b>			
2014/1/21	Daniel S. Peeper	Netherlands Cancer Institute, Amsterdam, Netherlands	In vivo RNAi screening for novel therapeutic cancer targets
2014/2/10	Hiroyoshi Nishikawa	WPI Immunology Frontier Research Center, Osaka University	Novel immunotherapy that targets regulatory T-cells
2014/2/10	Julie Brahmer	Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins, USA	Harnessing the immune system via checkpoint inhibitors for the treatment for non-small cell lung cancer
2014/6/9	Yutaka Kondo	Division of Molecular Oncology, Aichi Cancer Center Research Institute	Epigenetic studies on cancer
2014/6/16	Yuko Matsutoya	Ohno&Partners	Issues on patent in clinical medicine
2014/9/8	Gen-Sheng Feng	Department of Pathology, University of California San Diego, La Jolla, CA, USA.	Deciphering the Anti-Tumor Effect of Tumorigenic Molecules in Liver Cancer
2014/10/3	Masayasu Kojima	Institute of Life Science, Kurume University	Tips for grant application
2014/11/6	Pentao Liu	Wellcome Trust Sanger Institute, Cambridge, United Kingdom	Functions of Transcription Factors BCL11A and BCL11B Connect Development and Cancer
2014/11/28	Duane Compton	Geisel School of Medicine at Dartmouth, Hanover NH, USA	Mechanisms of chromosomal instability in human cancers
2014/11/28	Elmar Schiebel	Zentrum fuer Molekulare Biologie, Universitaet Heidelberg, Germany	Microtubule nucleation by gamma-tubulin complexes: mechanisms and evolution
2014/12/9	Yves Pommier	Developmental Therapeutics Branch and Laboratory of Molecular Pharmacology, Center for Cancer Research, NCI, NIH, USA	Topoisomerase-induced DNA damage and repair
2014/12/9	Junko Murai	Laboratory for Malignancy Control Research, Medical Innovation Center, Kyoto University Graduate School of Medicine	Topoisomerase-induced DNA damage and repair
2014/12/17	Rudolf Jaenisch	Whitehead Institute, Massachusetts Institute of Technology, Cambridge, MA, USA	Reprogramming, stem cell and cancer

## Cutting-edge Research Seminars

2014/2/18	Toshinori Hayashi	Division of Biosignaling, Tottori University School of Medicine	Molecular mechanisms of regeneration in newt
2014/2/24	Michael Kahn	Norris Comprehensive Cancer Center, University of Southern California	Pharmacologic Manipulation of Stem Cells and Cancer Stem Cells
2014/2/28	Masato Kanemaki	Molecular Function Laboratory, National Institute of Genetics	Crossroad of DNA replication and homologous recombination: on the role of cryptic DNA synthesis
2014/3/11	Hideki Yokoyama	Zentrum für Molekulare Biologie der Universität Heidelberg (ZMBH)	How chromosomes regulate mitosis
2014/3/27	Kosuke Sako	The Graduate School of Systems Life Sciences, Kyushu University	Emi2 mediates meiotic MII arrest by competitively inhibiting the binding of Ube2S to the APC/C in Xenopus
2014/5/13	Terence Strick	Senior Scientist, CNRS, Institut Jacques Monod, Paris	Real-time, bottom-up reconstruction of DNA repair pathways at single-molecule resolution
2014/6/27	Shinji Kosaka	Memorial Sloan-Kettering Cancer Center, Diagnostic Molecular Pathology, Marc Ladanyi Lab	Development of molecularly-targeted therapy in sarcoma by using next generation sequencer
2014/9/30	Ichiro Nakano	Director of Neural Cancer Stem Cell Program, The Ohio State University	Glioma stemness as a moving therapeutic target
2014/10/3	Sugiko Watanabe	Innovation Center for Medical Redox Navigation, Kyushu University	Crosstalk between chromatin modifications in the response to DNA damage
2014/12/19	Hironori Funabiki	Professor and Head of Laboratory of Chromosome and Cell Biology, Rockefeller University, New York	Formation of spindle and nuclear envelope on chromosomes – building completely different architectures using a similar principle