National Cancer Center

- 1962 established by Ministry of Health and Welfare (MHLW*1) as the first National Center for Advanced and Specialized Medical Care (followed by five more National Centers)

- Leading nation’s cancer treatment, prevention, control programs, research and education

- 2010 becomes “Independent Administrative Institute*2”

- 2015 appointed “National Research and Development Agency*3”

*1 MHLW: currently Ministry of Health, Labour and Welfare
*2 Privatized Government Corporation, *3 Highest Ranked Research Organization
### Milestones

<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1962</td>
<td>Jan</td>
<td>Ministry of Health and Welfare establishes <strong>National Cancer Center</strong></td>
</tr>
<tr>
<td></td>
<td>May</td>
<td><strong>Hospital</strong> starts operating</td>
</tr>
<tr>
<td>1992</td>
<td>Jul</td>
<td>establishes <strong>NCC Hospital East</strong></td>
</tr>
<tr>
<td>2004</td>
<td>Feb</td>
<td>establishes <strong>Research Center for Cancer Prevention and Screening</strong></td>
</tr>
<tr>
<td>2005</td>
<td>Oct</td>
<td>establishes <strong>Research Center on Innovative Oncology</strong></td>
</tr>
<tr>
<td>2006</td>
<td>Oct</td>
<td>establishes <strong>Center for Cancer Control and Information Services</strong></td>
</tr>
<tr>
<td>2010</td>
<td>Apr</td>
<td>becomes <strong>Independent Administrative Institution</strong></td>
</tr>
<tr>
<td>2012</td>
<td>Sep</td>
<td>establishes <strong>Exploratory Oncology Research &amp; Clinical Trial Center</strong></td>
</tr>
<tr>
<td>2015</td>
<td>Apr</td>
<td>appointed <strong>National Research and Development Agency</strong></td>
</tr>
<tr>
<td>2016</td>
<td>Jan</td>
<td>establishes <strong>Center for Research Administration and Support/ Center for Cancer Registries</strong></td>
</tr>
<tr>
<td>2017</td>
<td>April</td>
<td>establishes <strong>Cancer Metabolome Research Center in Yamagata Prefecture</strong></td>
</tr>
<tr>
<td></td>
<td>May</td>
<td>establishes <strong>Center of New Surgical and Endoscopic Development for Exploratory Technology (NEXT)</strong></td>
</tr>
</tbody>
</table>

### History of Cancer Control

- 1964: National Strategy: Five Pillars of Cancer Control
- 1984: Comprehensive Ten-year Strategy for Cancer Control
- 2004: The 3rd-term Comprehensive Ten-year Strategy for Cancer Control
- 2006: Cancer Control Act
- 2007: Basic Plan to Promote Cancer Control
- 2012: Basic Plan to Promote Cancer Control (Revised)
- 2014-10-year Strategy of Cancer Research
- 2015: AMED starts Japan Cancer Research Project
Vision and Mission

**NCC aims for:**

**Not to get cancer, not to be defeated by cancer, live with cancer**

**Vision**
NCC is committed to providing the best possible cancer treatment and care through relentless partnership with the community

**Missions**
1. Discovering the fundamental causes of cancer and realizing its earliest diagnosis and prevention
2. Developing innovation in medical prevention, diagnosis and treatment
3. Establishing and making available the most advanced standard of care to all patients
4. Exploring and providing the best “cancer survivorship” for patients
5. Gathering and disseminating comprehensive cancer related information to the community
6. Talent development of all NCC staff members
7. Recommending new initiatives and policy to the government
8. Contributing to global society in collaboration with international organizations

**Slogans:**

Novel, Challenge and Change

All Activities for Cancer Patients!
Organization

President

Hospital, Tsukiji campus

Hospital East, Kashiwa campus

Research Institute

Exploratory Oncology Research & Clinical Trial Center

Center for Public Health Sciences

Center for Cancer Control & Information Services

President's Offices
- Board of Directors
- Directors’ Meeting
- Executive Advisers to President
- Strategic Planning Bureau
- Center for Research Administration and Support
- Center for Education and Professional Career Development
- IT Integrating and Support Center
- Office for Advanced Medical Care Evaluation & Health Technology Assessment
- Administrative Departments
- Research Audit Section

Audit office

Number of Staff: 3249
(as of Apr. 1, 2017)

President's Offices

Number of Staff: 3249
(as of Apr. 1, 2017)
Hospital in Tsukiji Campus

Director

Deputy Directors
- Clinical Management
- Education
- Research
- Safety Management
- Development and Planning

Specialist ctrs&dept
- Outpatient Treatment Center
- Endoscopy Center
- Appearance Support Center
- Rare Cancer Center
- Interventional Radiology Center
- Supportive Care Development Center
- Genetic Medicine and Services
- Innovation Center for Supportive, Palliative and Psychosocial Care
- Cancer Screening Center
- Clinical Laboratories
- Surgical Center
- Clinical Engineering and Medical Technology
- Clinical Ethics
- Nutrition Management Office
- Infectious Diseases
- Center for Physician Referral and Medical Social Service
  - Consultation, Counseling and Support Service Center
- Medical Informatics
- Pharmacy
- Nursing
- Radiological Technology
- Clinical Research Support Office

Clinical Departments
- Neurosurgery and Neuro-Oncology
- Ophthalmic Oncology
- Head and Neck Surgery
- Plastic and Reconstructive Surgery
- Breast Surgery
- Breast and Medical Oncology
- Thoracic Surgery
- Thoracic Oncology
- Esophageal Surgery
- Gastric Surgery
- Colorectal Surgery
- Gastrointestinal Medical Oncology
- Endoscopy
- Hepatobiliary and Pancreatic Surgery
- Hepatobiliary and Pancreatic Oncology
- Urology
- Gynecology
- Musculoskeletal Oncology and Rehabilitation
- Dermatologic Oncology
- Hematology
- Hematopoietic Stem Cell Transplantation
- Pediatric Oncology
- Pediatric Surgery
- General Internal Medicine, Dentistry, Oncologic Emergencies
- Anesthesia and Intensive Care
- Palliative Medicine
- Psycho-Oncology
- Diagnostic Radiology
- Radiation Oncology
- Pathology and Clinical Laboratories
- Experimental Therapeutics

Dept. of Safety Management
- Offices of Clinical Safety; Infection Control & Prevention; Patient Dialogue Promotion; and Treatment Quality Control

Research Audit Section

Ethical Review Support Section

- Offices of Clinical Safety; Infection Control & Prevention; Patient Dialogue Promotion; and Treatment Quality Control
Hospital in Tsukiji Campus

Out-patient
- Approx. 1400 patients / day (new and returning)
- Out-patient treatment center (62 beds): chemotherapy for approx. 150 patients / day
- High precision radiation therapy

In-Patient
- 17 operation rooms; approx. 5500 operations per year
- Advanced endoscopic surgery for early gastric cancer (endoscopic mucosal resection<EMR>, endoscopic submucosal dissection<ESD>)
- Cutting-edge Interventional radiology with 2 Angio-CT systems
- Hematopoietic Stem Cell Transplant
- Palliative Medication and Patient Support
- Hospital based clinical trials and research

Cancer Screening Services
- High-precision screening using spiral-CT, positron emission tomography (PET), etc.
- 3,000 screened annually

578 beds
202 Staff Doctors, 134 Resident Doctors
649 Nurses as of April 1, 2017

Cyber Knife
Endoscopy therapeutic room
Built-in wiring ceiling system
Rare cancer hot-line
Out-patient Treatment Center 2
Appearance Support Center
Consultation, Counseling and Support Service Center
Hospital East

in Kashiwa campus

Director
- Clinical Management
- Education
- Research
- Safety Management

Deputy Directors

Safety Management
- Office of Safety Management
- Office of Infection Control and Prevention
- Research Audit Section
- Ethical Review Support Section

Clinical Departments
- Head and Neck Surgery
- Head and Neck Medical Oncology
- Plastic and Reconstructive Surgery
- Breast Surgery
- Breast and Medical Oncology
- Thoracic Surgery
- Thoracic Oncology
- Esophageal Surgery
- Gastric Surgery
- Colorectal Surgery
- Gastrointestinal Oncology
- Digestive Endoscopy
- Hepatobiliary and Pancreatic Surgery
- Hepatobiliary and Pancreatic Oncology
- Urology
- Gynecology
- Musculoskeletal Oncology and Rehabilitation
- Hematology
- General Internal Medicine, Dentistry, and Cardiovascular Medicine
- Pediatric Oncology
- Anesthesiology
- Intensive Care Medicine
- Palliative Medicine, Palliative Care Service
- Psycho-Oncology Service
- Diagnostic Radiology
- Radiation Oncology
- Pathology and Clinical Laboratories
- Experimental Therapeutics

Specialist ctrs&dept
- NEXT Medical Device Innovation Center
- Surgical Device Innovation Center
- Endoscopic Device Innovation Office
- Medical Device Project Management Office
- Outpatient Treatment Center
- Supportive Care Center
- Rare Cancer Center
- Clinical Research Support Office
- Genetic Medicine and Services
- Nursing
- Pharmacy
- Clinical Laboratories
- Radiological Technology
- Medical Information Management Office
- Office of Cancer Registry
- Surgical Center
- Clinical Engineering and Medical Technology
- Radiation Safety and Quality Assurance
- Nutrition Management Office
- Certified Nurse Curriculum

Director

Specialist ctrs&dept

Clinical Departments
What’s different?

- Proton Treatment Facility
  - First in Japan & Second in the world in-hospital treatment facility

- Supportive Care Center
  - Assist patients for both treatment and daily life from early stage

- First Palliative Care Ward among national hospitals
  - Support patients and their families physically, mentally, socially, and spiritually

- Early Stage Clinical Development
  - Abundant experience in early clinical trials and translational research

- Minimally invasive surgeries
  - ESD, Laparoscopic surgeries
Largest cancer research center in Japan, with 336 research staff
(including 155 adjuncts, 101 visiting fellows/invited scholars, as of April 1, 2017)

Major Accomplishments

1960’s to 1990’s,
- Discovered heterocyclic amines, food-born carcinogens
- Developed PCR-SSCP method (cited over 3,000 times)
- Made chromosome 21 map, and identified AML1 (RUNX1).

Recently,
- Identified novel fusion genes (RET cancer gene) in lung cancers, and characterized mutations in hepatitis C-associated liver cancers
- Initiated international collaboration on the epigenetic field for cancerization including “mechanism of tumor development” and “cancer prevention and treatment”
- Developed markers for patient stratification (early diagnosis and new drug development) in multiple types of cancers from miRNA analysis.
Bridge the gap between preclinical to clinical for efficient drug development

**Fundamental Innovative Oncology Core (FIOC)**

- Cell line: 919 cell lines
- Self-made: 165 lines
- Animal model: Transplanted model, Produced PDx model, Test tube model

**Bioresources Core**
- Genomic testable blood / tissue samples (yr 2013)
  - Hospital: 2,928,640
  - Hospital East: 183,416
- Pathological material with clinical information
  - Hospital: 3,834 (Operations), 16,370 (Biopsy)
  - Hospital East: 2,385 (Operations), 9,168 (Biopsy)

**Omics Core**

**Biomarker & Therapeutic Target Research Core**

**Biology and Disease Model core**

**Pathology & Immunology Core**

**Support animal & human biological experiments**

**Develop original phenotype in-vitro or animal models**

**Contributed to Developing first Clinical Sequencing laboratory in Japan**

**Research Support Core**

**EPOC**

**Hospital**

**Hospital East**

< Bioresources core >
- Genomic testable blood / tissue samples (yr 2013)
- Pathological material with clinical information
  - Hospital: 3,834 (Operations), 16,370 (Biopsy)
  - Hospital East: 2,385 (Operations), 9,168 (Biopsy)

- Cell line: 919 cell lines
- Self-made: 165 lines
- Animal model: Transplanted model, Produced PDx model, Test tube model

**CLIA level laboratory**
Mission

- First-in-human trials (FIH)
- Investigator-initiated trials (IITs) for unapproved drugs (including POC clinical trials)
- Translational Research (TR)

History

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jul 2011</td>
<td>NCC was selected as one of the designated early phase and exploratory clinical trial centers by the Ministry of Health, Labour and Welfare.</td>
</tr>
<tr>
<td>Sep 2012</td>
<td>NCC-EPOC was launched as a virtual organization for the missions above involving both Kashiwa and Tsukiji campuses.</td>
</tr>
<tr>
<td>Apr 2013</td>
<td>NCC-EPOC became an independent section in NCC with its own budget.</td>
</tr>
<tr>
<td>Apr 2015</td>
<td>Expanded by Integrating Research Center for Innovative Oncology of East Hospital</td>
</tr>
</tbody>
</table>
Exploratory Oncology Research & Clinical Trial Center (NCC-EPOC)

Active trials  As of March 31, 2015

<table>
<thead>
<tr>
<th></th>
<th>Preclinical</th>
<th>Phase I</th>
<th>Phase II</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seeds from academia</td>
<td>8</td>
<td>2</td>
<td>1</td>
<td>NCC, Keio Uni., Cancer Institute Hospital, National Institute of Biomedical Innovation and others</td>
</tr>
<tr>
<td>FIH trial</td>
<td>24</td>
<td></td>
<td></td>
<td>IIT 3, Domestic companies 14, Int’l companies 7</td>
</tr>
<tr>
<td>Investigator Initiated Registration Trial</td>
<td>6</td>
<td>6</td>
<td></td>
<td>For approval Other Expand Access Program (EAP) 3 trials</td>
</tr>
</tbody>
</table>

Academia-Private All Japan genome screening consortium: SCRUM-JAPAN

- Unite LC-SCRUM-Japan for lung cancer (yr 2013-) & GI-SCREEN for colorectal cancer (yr 2014-)
- Conduct genome screening using cutting-edge pan-cancer panel (ocp) for drug development
- Collaboration with 12 domestic and int’l Pharmaceutical companies
  - Patient enrollment began in Feb 2015
  - Planned total enrollment: 4,500/2 years
Center for Public Health Sciences

Groups

- Prevention Research
- Screening Research
- Common Research
- QOL Research

Divisions

- Epidemiology
- Prevention
- Cohort Consortium Research
- Screening Assessment and Management
- Division of Screening Technology
- Biostatistics
- Health Sociology
- Health Care Research
- Clinical Economics
- Bioethics
Center for Public Health Sciences

Public health research and interdisciplinary approaches combining sociology, economics, and ethics, for early detection and prevention of cancer, and cancer survivorship support

- **Cancer Prevention Studies**
  - Etiology research, and epidemiological research from cohort studies, for healthy life extension
  - Filling evidence-practice gap with implementation and dissemination science approach

- **Early Cancer Detection Research**
  - Developing and establishing cancer screening methods
  - Developing screening guidelines by assessing their efficacy, improving management via quality control, and increasing participation rate

- **Research for Patients, towards a more fulfilling life**
  - Studies for QOL improvement of cancer survivors and their families, recurrence prevention, supportive treatment, and community/workforce re-entry
  - Studies towards improving support for cancer survivors

- **Research Infrastructure**
  - Biostatistics, health sociology, clinical economics and bioethics.
Center for Cancer Control & Information Services

Director

- Cancer Information Service
- Medical Support and Partnership
- Cancer Survivorship Research
- Cancer Statistics Integration
- Health Services Research
- Tobacco Policy Research
- Center for Cancer Registries
Established October 2006
Provides accurate cancer info. & support to promote standardizing hospital service nationwide

<7 Core Functions>
1. cancer registration, cancer statistics analysis
2. cancer information services
3. cancer diagnosis & treatment support
4. training of cancer specialists
5. cancer survivorship support
6. cancer advocacy and policy support
7. tobacco policy support and advocacy

Consultation
Support
Patients, families & general public

434 Designated Cancer Care Hospitals (April 2017)
Prefectural Designated Cancer Care Hospitals
District Designated Cancer Care Hospitals

Cancer Care Support Center
Cooperation
Cancer Care Support Center

Providing information
Web-based & printed information

Books and booklets
Website
NCC – the core of the nationwide cancer-care network

- National Cancer Center ---2
- Prefectural Designated Cancer Care Hosps--49
- District Designated Cancer Care Hosps---348
- Other designated hosps ---35

Nationwide clinical support network with prefectural + district-designated 434 cancer care hospitals
Center for Research Administration and Support (CRAS)

Director

Deputy Director

Research Administration
- Research Administration Section
- Research Alliance and Intellectual Property Section
- Research Administrator

Biostatistics
- Biostatistics Section
- Medical Statistics Section

Bioethics
- Bioethics and Healthcare Law Section
- Human Research Protection Section
- COI Management Section
Center for Research Administration and Support (CRAS)
more powerful, systematic research support under “NCC New Vision”

- Research Administration Division
  - medical policy advocacy/research promotion, research funds/grants application and management, Research Administrator; research audit; alliance and intellectual property

- Biostatistics Division
  - research planning, design, data analysis, interpretation support

- Bioethics Division
  - Research ethics consultation, education, ethical / COI committee secretariat
## NCC: Publications and Citations

### (1) Publications and citations (as of June 1, 2017)

#### Year

<table>
<thead>
<tr>
<th>Year</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total publication including review articles</strong> (articles only)</td>
<td>559(535)</td>
<td>596(565)</td>
<td>627(581)</td>
<td>678(641)</td>
<td>686(637)</td>
<td>760(708)</td>
<td>3,906(3,667)</td>
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<tr>
<td><strong>Citation (Articles only)</strong></td>
<td>13,821(11,269)</td>
<td>12,067(11,462)</td>
<td>10,390(9,325)</td>
<td>6,115(5,477)</td>
<td>4,693(4,411)</td>
<td>2,158(1,961)</td>
<td>37,242(34,681)</td>
</tr>
<tr>
<td><strong>Highly cited (articles only)</strong></td>
<td>14(12)</td>
<td>15(14)</td>
<td>18(15)</td>
<td>10(8)</td>
<td>23(23)</td>
<td>20(17)</td>
<td>100(89)</td>
</tr>
<tr>
<td><strong>Impact factor 15+ (articles)</strong></td>
<td>12(12)</td>
<td>19(19)</td>
<td>17(16)</td>
<td>13(13)</td>
<td>23(22)</td>
<td>31(30)</td>
<td>115(112)</td>
</tr>
</tbody>
</table>

### (2) Comparison with Japanese Academia  (1/1/2011 – 12/31/2016)

#### 1) Overall Ranking
- NCC is ranked at 17th for HCP in 22 fields and 4th among National Research and Development Agencies.
- NCC is ranked at 2nd for relative ranking per national grant unit.

#### Total 22 Fields

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Academia</th>
<th># of HCP (A)</th>
<th>HCP rate</th>
<th>Total budget JPN (mil) (B)</th>
<th>Publication rate vs NCC Budget (A / B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>国立大学法人東京大学 Tokyo University</td>
<td>682</td>
<td>1.47</td>
<td>805</td>
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<tr>
<td>2</td>
<td>国立大学法人京都大学 Kyoto University</td>
<td>397</td>
<td>1.17</td>
<td>548</td>
<td>0.49</td>
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<tr>
<td>3</td>
<td>国立大学法人理化学研究所 Riken</td>
<td>310</td>
<td>2.17</td>
<td>516</td>
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<tr>
<td>4</td>
<td>国立大学法人東北大学 Tohoku University</td>
<td>258</td>
<td>0.98</td>
<td>456</td>
<td>0.38</td>
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<tr>
<td>5</td>
<td>国立大学法人大阪大学 Osaka University</td>
<td>253</td>
<td>0.97</td>
<td>437</td>
<td>0.39</td>
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<tr>
<td>6</td>
<td>国立大学法人名古屋大学 Nagoya University</td>
<td>209</td>
<td>1.12</td>
<td>316</td>
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<tr>
<td>7</td>
<td>国立大学法人九州大学 Kyushu University</td>
<td>194</td>
<td>1.01</td>
<td>417</td>
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<tr>
<td>8</td>
<td>国立研究開発法人・物質・材料研究機構 NIMS</td>
<td>189</td>
<td>2.35</td>
<td>120</td>
<td>1.06</td>
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<tr>
<td>9</td>
<td>国立大学法人筑波大学 Tsukuba University</td>
<td>153</td>
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<td>407</td>
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<tr>
<td>10</td>
<td>国立研究開発法人・産業技術総合研究所 AIST</td>
<td>143</td>
<td>1.01</td>
<td>664</td>
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<tr>
<td>11</td>
<td>国立大学法人東京工業大学 Tokyo Industrial University</td>
<td>124</td>
<td>0.96</td>
<td>214</td>
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<tr>
<td>12</td>
<td>国立大学法人北海道大学 Hokkaido University</td>
<td>114</td>
<td>0.63</td>
<td>362</td>
<td>0.21</td>
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<tr>
<td>13</td>
<td>学校法人早稲田大学 Waseda University</td>
<td>113</td>
<td>1.62</td>
<td>91</td>
<td>0.84</td>
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<tr>
<td>14</td>
<td>国立大学法人広島大学 Hiroshima University</td>
<td>105</td>
<td>1.05</td>
<td>249</td>
<td>0.28</td>
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<tr>
<td>15</td>
<td>国立大学法人岡山大学 Okayama University</td>
<td>98</td>
<td>1.18</td>
<td>181</td>
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<td>16</td>
<td>国立大学法人神戸大学 Kobe University</td>
<td>90</td>
<td>1.01</td>
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<tr>
<td>17</td>
<td>National Cancer Center</td>
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<td>60</td>
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<td>18</td>
<td>大学共同利用機構・高エネルギー加速器研究機構 KEK</td>
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<td>2.46</td>
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<tr>
<td>19</td>
<td>国立大学法人信州大学 Shinshu University</td>
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<td>137</td>
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<tr>
<td>20</td>
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<td>74</td>
<td>3.48</td>
<td>117</td>
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</tr>
</tbody>
</table>

#### 2) NCC's HCP ranking and Rate b Field
- NCC generates world leading citation articles (top 1%) in 8 fields as below. NCC is ranked at 2nd in clinical research in Japan.

<table>
<thead>
<tr>
<th>Field</th>
<th># of HCP</th>
<th>Rank</th>
<th>HCP rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical medicine</td>
<td>76</td>
<td>2</td>
<td>3.01</td>
</tr>
<tr>
<td>Molecular biology and genetics</td>
<td>6</td>
<td>11</td>
<td>2.82</td>
</tr>
<tr>
<td>Social science</td>
<td>2</td>
<td>11</td>
<td>2.60</td>
</tr>
<tr>
<td>Biology &amp; Biochemistry</td>
<td>1</td>
<td>41</td>
<td>0.55</td>
</tr>
<tr>
<td>Immunology</td>
<td>1</td>
<td>24</td>
<td>0.95</td>
</tr>
<tr>
<td>Agriculture</td>
<td>1</td>
<td>5</td>
<td>5.62</td>
</tr>
<tr>
<td>Neurosciences</td>
<td>1</td>
<td>21</td>
<td>1.19</td>
</tr>
<tr>
<td>Material Sciences</td>
<td>1</td>
<td>29</td>
<td>25.1</td>
</tr>
<tr>
<td>Total</td>
<td>89</td>
<td>17</td>
<td>2.43</td>
</tr>
</tbody>
</table>
1. Source: Edited by NCC from Clarivate Analytics, formerly known as Tomson Reuter, “Essential Science Indicators (ESI)”
2. ESI is public information released by Clarivate Analytics showing top 1% citation list in 22 scientific fields every year. NCC edited the information so that NCC can be compared to other Japanese institutes in the above figures. Consequently it demonstrates that NCC continues to deliver HCP at the highest level regularly.
3. JST is excluded from ranking