NCI Center for Global Health
Update on U.S. – China Partnership in Cancer Research

Board of Scientific Advisors & National Cancer Advisory Board

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NCI Center for Global Health
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**Brief History**

- **1979**  US-China Agreement on Cooperation in Science and Technology
- **1980**  Atlas of Cancer Mortality in the People’s Republic of China
- **1981**  Launch of epidemiologic studies of lung, esophagus, stomach, liver cancers, and studies of environmental and occupational exposures
- **1985**  Linxian Nutrition Intervention Trial (NIT) launched
- **1986**  Shanghai Health Study Cohort launched
- **1993**  NIT results published
- **1997**  Study of hematologic cancers in benzene exposed worker published

- **2008**  NCI Office of China Cancer Programs, Beijing, Dr. Julie Schneider
- **2010**  MOU NCI–Beijing Tiantan Hosp (Chinese Cancer Genome Consortium)
- **2010**  MOU NIH–National Science Foundation of China (NSFC)
- **2011**  MOU HHS–Ministry of Science and Technology (MOST)
- **2011**  NCI Center for Global Health, Beijing, East Asia, Dr. Ann Chao
- **2012**  MOU NCI–Chinese National Cancer Center
- **2015**  Ongoing research and training cooperation
## Cancer Incidence, China, 2011

<table>
<thead>
<tr>
<th>Rank</th>
<th>Male</th>
<th></th>
<th>Female</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Site</td>
<td>Cases</td>
<td>ASR*</td>
<td>Site</td>
</tr>
<tr>
<td>1</td>
<td>Lung</td>
<td>441,364</td>
<td>48.44</td>
<td>Breast</td>
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<tr>
<td>2</td>
<td>Stomach</td>
<td>296,419</td>
<td>32.62</td>
<td>Lung</td>
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<tr>
<td>3</td>
<td>Liver</td>
<td>264,635</td>
<td>29.30</td>
<td>Colorectum</td>
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<tr>
<td>4</td>
<td>Esophagus</td>
<td>205,560</td>
<td>22.47</td>
<td>Stomach</td>
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<tr>
<td>5</td>
<td>Colorectum</td>
<td>178,404</td>
<td>19.70</td>
<td>Liver</td>
</tr>
<tr>
<td>6</td>
<td>Bladder</td>
<td>53,074</td>
<td>5.82</td>
<td>Cervix</td>
</tr>
<tr>
<td>7</td>
<td>Prostate</td>
<td>49,007</td>
<td>5.33</td>
<td>Esophagus</td>
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<tr>
<td>8</td>
<td>Pancreas</td>
<td>45,385</td>
<td>4.99</td>
<td>Thyroid</td>
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<tr>
<td>9</td>
<td>Brain, CNS</td>
<td>43,289</td>
<td>5.22</td>
<td>Uterus</td>
</tr>
<tr>
<td>10</td>
<td>Lymphoma</td>
<td>41,298</td>
<td>4.80</td>
<td>Ovary</td>
</tr>
</tbody>
</table>

Data Source: 2013 Chinese Cancer Registry Annual Report
* ASR – age standardized rate, Segi standard population
## Cancer Mortality, China, 2011

<table>
<thead>
<tr>
<th>Rank</th>
<th>Male</th>
<th></th>
<th></th>
<th></th>
<th>Female</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lung</td>
<td>364,432</td>
<td>39.94</td>
<td>Lung</td>
<td>164,721</td>
<td>16.68</td>
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<tr>
<td>2</td>
<td>Liver</td>
<td>239,218</td>
<td>26.38</td>
<td>Stomach</td>
<td>90,792</td>
<td>9.21</td>
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<tr>
<td>3</td>
<td>Stomach</td>
<td>206,704</td>
<td>22.69</td>
<td>Liver</td>
<td>83,199</td>
<td>8.61</td>
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<tr>
<td>4</td>
<td>Esophagus</td>
<td>154,587</td>
<td>16.86</td>
<td>Esophagus</td>
<td>64,371</td>
<td>6.38</td>
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<tr>
<td>5</td>
<td>Colorectum</td>
<td>86,427</td>
<td>9.40</td>
<td>Colorectum</td>
<td>63,295</td>
<td>6.26</td>
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<tr>
<td>6</td>
<td>Pancreas</td>
<td>40,580</td>
<td>4.43</td>
<td>Breast</td>
<td>60,473</td>
<td>6.57</td>
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<tr>
<td>7</td>
<td>Brain,CNS</td>
<td>28,542</td>
<td>3.35</td>
<td>Pancreas</td>
<td>32,143</td>
<td>3.21</td>
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<tr>
<td>8</td>
<td>Leukaemia</td>
<td>27,907</td>
<td>3.46</td>
<td>Cervix</td>
<td>23,375</td>
<td>2.59</td>
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<tr>
<td>9</td>
<td>Lymphoma</td>
<td>25,066</td>
<td>2.84</td>
<td>Brain,CNS</td>
<td>22,234</td>
<td>2.54</td>
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<tr>
<td>10</td>
<td>Bladder</td>
<td>20,949</td>
<td>2.23</td>
<td>Leukaemia</td>
<td>19,708</td>
<td>2.45</td>
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</tr>
</tbody>
</table>

Data Source: 2013 Chinese Cancer Registry Annual Report
* ASR – age standardized rate, Segi standard population
Research – Addressing Major Cancer Burdens

Lung Cancer
- Occupational Cohort of Tin miners in Yunnan Province
- Genetic susceptibility and environmental exposures in women who never smoked tobacco

Upper Gastrointestinal Cancers
- Studies of etiology, early detection, and treatment
- Nutritional Intervention Trial

Liver Cancer
- Epidemiology
- Genetic basis of hepatocellular carcinoma, diagnostic markers, potential treatment targets
Research – Addressing Major Cancer Burdens

Colorectal Cancer
- Microbiome and adenoma, colorectal cancer screening

Breast Cancer
- Breast density and tumor molecular subtypes

Nasopharyngeal Cancer in Southern China
- Familial, viral, dietary, and environmental risk factors

Hematologic Cancers
- Lymphoma subtypes in relation to occupational and environmental exposures
- Benzene-exposed workers; study results were instrumental in modifying US EPA rulings
Research Co-Funding

NIH – National Science Foundation of China (NSFC)
US-China Program for Biomedical Research Cooperation

Objective
– Build US-China scientific cooperation and teams to address a common question
– Assess the benefits and challenges of co-managing a collaborative program

Year 1 (FY2011)
– Extramural 1-year administrative supplements, intramural 1-year new awards
– NIH ~$3 million (NCI, NIAID, OAR), NSFC ~9 million RMB

Year 2 (FY2012)
– Extramural 1-year administrative supplements, intramural 1-year new awards
– NIH ~$4 million (NCI, NIAID, OAR, NIMH), NSFC ~12 million RMB

Year 3 (FY2013)
– Extramural 3-year R01 awards
– NIH ~$5 million (NCI, NIAID, OAR, NIMH, NINDS), NSFC ~15 million RMB

Evaluation
Research Co-Funding

NIH – Chinese Ministry of Science and Technology (MOST)

Objective
- Build new US-China cooperation in biomedical research funding, including clinical research
- Exchanges information on research funding governance, infrastructure, and management

Status
- MOST engagement with NIAID
- 2014 MOST leadership visit to NIH in 2014 with leaders of 4 National Clinical Research Centers, issued call for proposals from National Clinical Research Centers working with NIH
Training and Capacity Building

In the US
- Chinese post-doctoral fellows at NCI, NCI-designated Cancer Centers, and universities
- Chinese researchers and visiting fellows at NCI, NCI Cancer Centers, and universities
- Participation in NCI’s Summer Principles and Practices of Cancer Prevention and Control Course

In China
- Training through working on joint research
- Joint workshops (select examples)
  - Media workshop for journalists
  - Using cancer registry data to inform research and cancer prevention and control policy
- Training of US Fogarty and Fulbright fellows
Role of NCI Center for Global Health

Advocate for research and implementation of research results
- HPV vaccine approval and implementation in China, tobacco control, etc.
- Building and sustaining national clinical research networks
- Partnerships in China and internationally (WHO, IARC, etc.)

Convene
- Partners within and across disciplines, institutions, countries, regions

Facilitate
- Ongoing research collaborations and help address needs of intramural and extramural scientists in the US, China, and elsewhere
- Opportunities for scientific exchange
- New initiatives in cancer research, prevention and control

Explore
- Outstanding scientists and opportunities for research, funding, advocacy
- Training and capacity building
- Cooperation in China’s global health work
China-US partnership in cancer research