

## TUESDAY, 16 JULY 2013

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### PANEL 1

9:00-11:00 am

CHAIRPERSON **Michael M.J. Fischer** | Massachusetts Institute of Technology, USA,  
and National University of Singapore

“Before the Hub”: The League of Nations Health Organization and the Eastern Bureau  
of Epidemiological Information, Singapore, (1925-mid-1940s)

SPEAKER **John P. DiMoia** | National University of Singapore

DISCUSSANT **Wayne Soon** | Princeton University, USA

Public Health in a Landlord State: Cleanliness, Germs, and Infrastructure in 20th  
Century Singapore

SPEAKER **Gregory K. Clancey** | National University of Singapore

DISCUSSANT **Axel Gelfert** | National University of Singapore

Making Cholera Up: The Diasporic and Inter-Asian Efforts in Constructing a Disease  
in Republican Shanghai, 1931-1935

SPEAKER **Wayne Soon** | Princeton University, USA

DISCUSSANT **Elizabeth Chee Pui Yee** | National University of Singapore

From Brain Drain to Foreign Talent: The Problematics of Transnational Flows  
of Scientific, Technical, and Medical Experts in Singapore

SPEAKER **Honghong Tinn** | National University of Singapore

DISCUSSANT **John P. DiMoia** | National University of Singapore

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## TUESDAY, 16 JULY 2013

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### PANEL 2

1:30-3:30pm

CHAIRPERSON **John W. P. Phillips** | National University of Singapore

#### Challenges in Governing Clinical uses of Autologous Adult Stem Cells: An International Review of Regulations in Five Jurisdictions

SPEAKERS **Tamra Lysaght** | National University of Singapore  
**Ian Kerridge** | University of Sydney  
**Douglas Sipp** | RIKEN Center for Developmental Biology, Japan  
**Gerard Porter** | University of Edinburgh, UK  
**Benjamin Capps** | National University of Singapore  
DISCUSSANT **Haidan Chen** | National University of Singapore

#### Experimentation Stem Cell Applications: Why 'The Unethical' is 'Acceptable' in Bionetworking

SPEAKER **Margaret Sleeboom-Faulkner** | University of Sussex, UK  
DISCUSSANT **Tamra Lysaght** | National University of Singapore

#### Situating Ethics as Social Institutions: Tracing the Techno-Politics of Human Research in Taiwan

SPEAKER **Wen-Hua Kuo** | National Yang-Ming University, Taiwan  
DISCUSSANT **Melinda Cooper** | The University of Sydney, Australia

#### Commercial Genetic Testing and its Governance in Chinese Society

SPEAKERS **Suli Sui** | Peking Union Medical College, China  
**Margaret Sleeboom-Faulkner** | University of Sussex, UK  
DISCUSSANT **Aihwa Ong** | University of California, Berkeley, USA

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## TUESDAY, 16 JULY 2013

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### PANEL 3

4:00-6:00pm

CHAIRPERSON **Denisa Kera** | National University of Singapore

#### Trash or Treasure? Sociotechnical Imaginaries and Biobanks in China

SPEAKER **Haidan Chen** | National University of Singapore

DISCUSSANT **Ayo Wahlberg** | University of Copenhagen, Denmark

#### Good Quality – The Routinisation of Sperm Banking in China

SPEAKER **Ayo Wahlberg** | University of Copenhagen, Denmark

DISCUSSANT **Margaret Sleeboom-Faulkner** | University of Sussex, UK

#### Experimental Postsocialism – The Hospital as Export Zone and Knowledge Park in Reform Era China

SPEAKER **Melinda Cooper** | The University of Sydney, Australia

DISCUSSANT **Suli Sui** | Peking Union Medical College, China

#### “To Cure a Hundred Diseases”: The Curious Case of Chicken Blood Therapy

SPEAKER **Elizabeth Chee Pui Yee** | National University of Singapore

DISCUSSANT **Wen-Hua Kuo** | National Yang-Ming University, Taiwan

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## WEDNESDAY, 17 JULY 2013

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### PANEL 4

9:00-11:00 am

CHAIRPERSON **Catelijne Coopmans** | National University of Singapore

#### Biotechnology and Schizophrenia: The Continuous Function in Immunological Manipulation

SPEAKER **John W. P. Phillips** | National University of Singapore

DISCUSSANT **Denisa Kera** | National University of Singapore

#### Biopolis Reoriented: The Cell, the Brain, Aging

SPEAKER **Michael M.J. Fischer** | Massachusetts Institute of Technology, USA  
and National University of Singapore

DISCUSSANT **John W.P. Phillips** | National University of Singapore

#### Big Biology in Motion: The Sociological Anatomy of the Protein 3000 Program in Japan

SPEAKER **Masato Fukushima** | University of Tokyo, Japan

DISCUSSANT **Gregory K. Clancey** | National University of Singapore

#### The Emergence of Asia as a Research Area: From Nations to Networks

SPEAKER **Philip Cho** | National University of Singapore

DISCUSSANT **Michael M.J. Fischer** | Massachusetts Institute of Technology, USA  
and National University of Singapore

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## WEDNESDAY, 17 JULY 2013

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### PANEL 5

4:30-6:00pm

CHAIRPERSON **Margaret Tan Ai Hua** | National University of Singapore

#### Why Singapore Trumps Iceland

SPEAKER **Aihwa Ong** | University of California, Berkeley, USA

DISCUSSANT **Masato Fukushima** | University of Tokyo, Japan

#### Cultivating Local Talent for the Biomedical Sciences in Singapore

SPEAKERS **Catelijne Coopmans** | National University of Singapore

**Rachel Ng** | National University of Singapore

**Christabel Tan** | National University of Singapore

**Dilu Wewalaarchchi** | National University of Singapore

DISCUSSANT **Honghong Tinn** | National University of Singapore

#### Open Source Hardware (OSHW) Tinkering with Biology in Asia: Supporting Biotech Research in the Global South

SPEAKER **Denisa Kera** | National University of Singapore

DISCUSSANT **Catelijne Coopmans** | National University of Singapore

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*Workshop Closing Remarks will be from 6:00pm to 6:30pm*

## “Before the Hub”: The League of Nations Health Organization and the Eastern Bureau of Epidemiological Information, Singapore, (1925-mid-1940s)

**JOHN P. DIMOIA**

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With the rise of Singapore as a major biomedical center since the mid to late 1990s, scholars have sought to understand the underlying dynamics by which this rapid transformation has taken place, often looking for comparisons with neighboring developing states and their post-war industrial polices, as in Joseph Wong’s recent Betting on Biotech (2012).

However, medicine in Singapore has a much longer history, and in particular, Singapore played a critical role in the early 20<sup>th</sup> century during some of the pre-war’s most interesting and formative attempts at mobilizing early forms of international health networks. Specifically, the island, already a major point of communications situated within the British colonial empire, became the site of the Far Eastern Bureau of the League of Nations following World War I, making Singapore responsible for maintaining epidemiological records and medical data for much of the East and SE Asian region.

With malaria, cholera, and other forms of disease circulating through Republican China and SE Asia, this represented no small task, and the prominent role made Singapore a “hub”—to employ the more recent language somewhat anachronistically—long before many of the current accounts would acknowledge. The paper therefore seeks to recover and document this earlier history of Singapore as an incipient medical center, using this legacy to interrogate and challenge more recent accounts.

**John DiMoia** is an Assistant Professor in History at the National University of Singapore (NUS), where he currently teaches classes focusing on (1) the broader history of technology (esp. in EA, 18th century-present), (2) the history of medicine (tropical, global, 18th century-present), and (3) Modern Korea (mid-19th century-present). He is the author of *Reconstructing Bodies: Biomedicine, Health and Nation-Building in South Korea since 1945* (Stanford University Press / Columbia University Press: WEAI series). Along with his position in the History department, he is an Associate Fellow at Tembusu College / NUS, and a member of the STS cluster. He is working on two new projects: the first a book on energy issues in NE Asia and the Korean peninsula, centering in particular on the decision by South Korea to "go nuclear" in the late 1960s; and the second, a history of North Korean propaganda materials, the images these materials contribute to crafting both domestically and internationally, and the possible historical understandings of that nation from an international perspective.

## Public Health in a Landlord State: Cleanliness, Germs, and Infrastructure in 20th Century Singapore

### **GREGORY CLANCEY**

Asia Research Institute, and Tembusu College, National University of Singapore  
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One task of the Asian Biopoleis project is understanding the origins of Singapore's current experiment with biomedical research. Myself, Axel Gelfert, and now John Dimoia (this conference) have constructed historical narratives of Singapore-based biomedical research using various time frames, and following different actors, which together largely account for the emphasis on biomedical research in the new millennium. Philip Cho, Aihwa Ong, Michael M.J. Fischer, have also added to this understanding in the course of pursuing more contemporary questions and issues. Building on this previous work, my current paper attempts to frame the issue somewhat differently, by looking not at the origins of biomedical research directly, but rather a crisis in the local public health regime which helped lay the groundwork. I argue that Singapore had largely fulfilled colonial public health goals by the late 1960s and 1970s, primarily as a by-product of civil engineering, and saw the rapid expansion of private medical practice in the same period. Both these phenomena created a crisis in the post-colonial Health Ministry, in the form of excess capacity, estrangement from its traditional 'constituents' (the usual subjects of public health policing), and the growing power of private physicians who were not its direct clients. One result was an a flurry of public health campaigns focused on cleaning and cleansing, which partly continued the colonial project, but which also kept the Ministry in the public eye constituted one of its major efforts in nation-building. My paper does not touch on biomedical research directly, nor treat the level of the microbial, but rather adds missing context to later and better-understood stories.

**Gregory CLANCEY** is Leader of the Science, Technology and Society Research Cluster at the Asia Research Institute, Associate Professor of History, and Master of Tembusu College at the National University of Singapore. He received his PhD in the History & Social Study of Science and Technology from MIT in 1998 and has since taught Japanese History and the History of Science and Technology at NUS. In 2006-2010 he was Assistant Dean of the Faculty of Arts and Social Sciences, where one of his priorities was to build a Science, Technology & Society Research Cluster. He is the author of *Earthquake Nation: The Cultural Politics of Japanese Seismicity, 1868-1930* (Berkeley: U. of California Press, 2006), which was awarded the Edelstein Prize by the Society for the History of Technology (SHOT). He is also editor (with M.R. Smith) of *Major Problems in the History of American Technology* (Houghton-Mifflin, 1998), and (with Ryan Bishop and John Phillips) *The City as Target* (Routledge, 2013). He has recently (2012) been awarded the Morison Prize by MIT for his efforts to promote STS scholarship in Asia.

## Making Cholera Up: The Diasporic and Inter-Asian Efforts in Constructing a Disease in Republican Shanghai, 1931-1935

### **WAYNE SOON**

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A typical historical narrative of a disease in a polity discusses its etiology, prevention, and treatment, and how societal actors grapple with the ramifications of such scourges in modern society. Yet, in a western medicine, few consider how diseases uncovered in the West was reconstructed and propagated to the public in non-western and non-colonial context. This paper examines how the Chinese National Quarantine Bureau as well as the Shanghai commercial press propagated the etiology, prevention, and treatment of cholera to Shanghai residents from 1932-1935. Public health administrators who were involved in medical propaganda however, saw Cholera very differently in their own circles. They were not sure whether these measures would work, and even whether the disease in Shanghai was even cholera. Moreover, their public messages and advocacies were controversial, seen in the light of opposition from medical doctors in the region. This paper raises questions of medical elitism, ethical representations, and the flip side of the triumph of western medicine in the non-West.

**Wayne SOON** is a PhD Candidate in the History Department at Princeton University. His dissertation is titled, "Military Science, Medicine, and Technology in China, Taiwan, and Southeast Asia: the Overseas Chinese and the American intervention, 1926-1960." His research interest includes the history of science, medicine, and technology in East Asia, the identity politics behind the making of modern "Chineseness," and the relationship between the military and health-care systems in East and Southeast Asia.



## From Brain Drain to Foreign Talent: The Problematics of Transnational Flows of Scientific, Technical, and Medical Experts in Singapore

**HONGHONG TINN**

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The recent scholarship on Asia Biopoleis has pointed out that the transnational flows of biomedical researchers were critical in the establishment of networks of material and human resources for success of research among different scientific fields. My research aims to identify the historical transitions in the changing ideas and practices of the transnational migration of scientists, engineers, and researchers in Singapore. Specifically, I focus on such discourses from the 1960s to the early 1980s, in which political leaders in Singapore were concerned about the possible outflow of ‘talented’ Singaporeans. Such discourses were intimately linked with the tensions between basic and advanced sciences, the nature of governance in Singapore, and the changing debates on immigration policy in the island.

**Honghong TINN** is a research fellow at Tembusu College and Asia Research Institute at the National University of Singapore. She received her PhD from the department of Science and Technology Studies at Cornell University. Her dissertation, “Working with Computers, Constructing a Developing Country: Introducing, Using, Building, and Tinkering With Computers in Cold War Taiwan, 1959-1984,” uses a developing country’s appropriation of mainframe computers, minicomputers, and microcomputers as a lens for understanding the historical relationships between computing technology, the development discourse underlying the Cold War, and the international exchanges of scientific and technological expertise. Her articles have been published in *IEEE Annals of the History of Computing*. She is on the International Outreach Committee of the Society for the History of Technology (SHOT), and is the book review editor and convener of *East Asian Science, Technology, and Society: An International Journal*. Her recent research interest investigates the efforts in the 1960s by the Taiwanese and Singaporeans in creating techno-industrial sites and their recent manoeuvres in researching biomedicine and manufacturing biotechnology.

## Challenges in Governing Clinical Uses of Autologous Adult Stem Cells: An International Review of Regulations in Five Jurisdictions

### **TAMRA LYSAGHT**

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### **IAN KERRIDGE**

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### **DOUGLAS SIPP**

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### **GERARD PORTER**

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### **BENJAMIN CAPPS**

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Cell and tissue-based products, such as autologous adult stem cells, are being prescribed by physicians across the world for diseases and illnesses that they have neither been approved for or been demonstrated as safe and effective in formal clinical trials. These doctors often form part of transnational bionetworks that exploit differences and similarities in the regulatory systems across geographical contexts. In this paper, we examine the regulatory infrastructure of five geographically diverse but socio-economically comparable countries with the aim of identifying similarities and differences in how these products are regulated and governed within clinical contexts. We find that while there are many subtle technical differences in how these regulations are implemented, they are sufficiently similar that it is difficult to explain why these practices appear more prevalent in some countries and not in others. We conclude with suggestions for how international governance frameworks might be improved to discourage the exploitation of vulnerable patient populations while enabling innovation in the clinical application of cellular therapies.

**Tamra LYSAGHT** is a Senior Research Fellow at the Asia Research Institute in Singapore. Her research interests broadly focus on the bioethical, regulatory and sociopolitical dimensions of translational science and emergent biomedical technologies, including stem cell science, genomics and reproductive health, and she is currently working on the development of governance models for the ethical conduct of biomedical experimentation within clinical contexts. She has previously held research positions at the Centre for Biomedical Ethics at the National University of Singapore and completed her Ph.D at the University of Sydney in association with the Unit for History and Philosophy of Science and the Centre for Values, Ethics and the Law in Medicine.

**Ian KERRIDGE** is an internationally recognized scholar in bioethics and the philosophy of medicine. He is Associate Professor in Bioethics and Director of the Centre for Values, Ethics and the Law in Medicine (VELiM) at the University of Sydney and Staff Haematologist/BMT Physician at Royal North Shore Hospital, Sydney. He is also currently the Chair of the Australian Bone Marrow Donor Registry (ABMDR) Ethics Committee, member of the Australian health Ethics Committee, board member of the Australasian Association of Bioethics and Health Law (AABHL) and a member of the NSW Clinical Ethics Advisory Group. Ian has published five textbooks/monographs of bioethics/philosophy (most recently, *Ethics and Law for the Health Professions*, Third Edition (Federation Press; 2013)), 20 book chapters on ethics, research ethics and infectious diseases and over 150 papers in peer-reviewed journals on ethics, medical philosophy and haematology.

**Doug SIPP** is head of the Science Policy and Ethics Studies unit at the RIKEN Center for Developmental Biology in Kobe, Japan. His work focuses primarily on issues in the clinical application and commercialization of stem cell therapeutics, and the analysis of approaches to stem cell research and development in the Asia-Pacific region. He serves on numerous committees, task forces, and editorial boards in the fields of developmental and stem cell biology, and regenerative medicine.

**Gerard PORTER** was appointed lecturer in Medical Law and Ethics at the University of Edinburgh in 2006. He is a graduate of Cardiff University (LL.B. Law and Japanese) and Kyushu University, Japan (LL.M. International Economic and Business Law). His research interests include medical law, patent law and the regulation of the life sciences. He speaks Japanese and also conducts comparative research in Japanese law within these subject areas. He has held visiting fellowships at the Centre for Studies in Ethics and Rights (Mumbai, India), the Centre for Biomedical Ethics, National University of Singapore and with the Program on Science, Technology and Society at the John F. Kennedy School of Government, Harvard University.

**Benjamin CAPPS** is Director of Graduate Studies at the Centre for Biomedical Ethics, National University of Singapore. His primary research interests are in stem cell science and ethics; and neuroethics, drugs (mis)use and addiction research. His research also focuses on the development of jurisprudential and political theory in the use of human rights concepts in biotechnology and bio-medicine. He is also a member of the Human Genome Organisation's (HUGO) Committee on Ethics, Law and Society; the Pro-Tem National Oversight Committee for Human Animal Combinations in Stem Cell Research (Ministry of Health, Singapore); and the Neuroethics Working Group of the Bioethics Advisory Committee (Singapore).

## Experimentation Stem Cell Applications: Why 'The Unethical' is 'Acceptable' in Bionetworking

**MARGARET SLEEBOOM-FAULKNER**

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Only in the light of the globalisation of the health industry, we can fully understand that current international guidelines for experimental medicine/clinical trials cannot adequately accommodate the needs of patient groups. Ironically, the globalisation of the health industry is accompanied by the localisation of cheaper and less regulated forms of therapy provision. It is the space where poor and rich patients become one for different reasons and under different circumstances.

Often, scientific evidence, fee payment and informed consent are regarded as the main criteria to distinguish between 'good' clinical trials and 'bad' human experimentation. These criteria are based on notions of evidence based science, which ideal forms the basis of clinical research trials. Using the notion of bionetworking, pertaining to the myriad of activities necessary to produce 'science', this article shows why the unethical is acceptable when the concept of ethical science is dislocated from the society in which it is produced.

This article aims, first, to put into perspective the differences between 'scientific' CRTs and 'rogue' experimental stem cell therapies; and, second, to show why scientific evidence, medical ethics and fee-for-treatment are not adequate criteria for judging the difference between adequate and inadequate treatment. An examination of how 'bionetworking' externalises and internalises factors relevant to treatment methods can render an indication of the adequacy of a therapy considering the circumstances in which it is offered and received. The case study of Beike Biotech will serve as an example.

**Margaret SLEEBOOM-FAULKNER** is Professor in anthropology at the University of Sussex (Brighton, UK). Her work focuses on nationalism and processes of nation-state building in China and Japan and on biotechnology and society in East Asia. She currently leads the Centre for Bionetworking and two projects on 'Bionetworking in Asia' focusing on international science collaboration in advanced stem cell therapies (funded by the ESRC, 2011-2014) and in biobanking in the life sciences and hospitals (financed by the ERC, 2012-2017) (see: <http://www.centreforbionetworking.org/>) Margaret has set up and directed the Socio-genetic Marginalization in Asia Programme (SMAP) in collaboration with the IIAS and the ASSR (2004-2009) and co-led a project on International Science and Bioethical Collaboration (ISBC), a joint research project with the Universities of Cambridge and Durham. She publishes widely on the socio-science aspects of new genetic, regenerative medicine and medical technologies, on issues of ethnic and national identity in Asia, and on the history of academia and science in China in international journals. (see: <http://www.sussex.ac.uk/profiles/192052>)

## Situating Ethics as Social Institutions: Tracing the Techno-Politics of Human Research in Taiwan

**WEN-HUA KUO**

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This paper provides an STS commentary on Taiwan's regulation over human research. In particular, it explores the widening gap between the formulation of legal framework on research and the public debates arising in the name of ethics.

This paper has three goals. The first is to explore techno-politics as seen in the regulations concerning human research. It argues that Taiwan in fact failed to form a comprehensive legal framework to accommodate all clinical researches, some initiated by physicians and some by drug companies. Second, this paper identifies the social engines, the controversy over the Taiwan Biobank project, which facilitated the creation of Taiwan's ethical framework, the Act on Human Subject Research, in 2011. Third, by viewing the IRBs as social institutions for these legal inconsistencies, this paper offers a preliminary analysis on the IRBs. They are not only organizations for reviewing routines; they are machines that shape ethics as a business with potentials.

By closely tracing how ethical principles are received along with the advancement of medical innovations, this paper hopes to show that ethics is not an empty, abstract concept. Like biotechnology, it is woven into social fabrics that, through different institutional and cultural arrangements, facilitate the transformation of our bodies and lives.

**Wen-Hua KUO** is an Associate Professor at National Yang-Ming University, Taiwan, where he teaches social study of medicine and public health. His research concerns health governance in the transformation of East Asian states, with thematic focuses on Cold War epidemic control and debates on the harmonization of clinical trial regulations. His publications include "The Voice on the Bridge: Taiwan's Regulatory Engagement with Global Pharmaceuticals", which wins the David Edge Prize of the Society for Social Studies of Science in 2011.

## Commercial Genetic Testing and its Governance in Chinese Society

### **SULI SUI**

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### **MARGARET SLEEBOOM-FAULKNER**

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This paper provides an empirical account of commercial genetic testing in China. Commercial predictive genetic testing has emerged and is developing rapidly in China, but there is no strict and effective governance. This raises a number of serious social and ethical issues as a consequence of the enormous potential market for such tests. The paper demonstrates that the commercialization of genetic testing and the lack of adequate regulation have created an environment in which dubious advertising practices and misleading and unprofessional medical advice are common place. The consequences of these ethically problematic activities for the users of predictive tests are unknown. The paper concludes with a bioethical and social science perspective on the ethical governance issues raised by the dissemination and utilization of commercial genetic testing in Chinese society.

**Suli SUI** is an Associate Professor of the Social Science Department at Peking Union Medical College. She holds a Ph.D. in Medical Sociology from Amsterdam University in Holland and a Masters of Law from Renmin University of China and a qualified lawyer. She is a member of the Ethical Review Board at Chinese Academy of Medical Sciences and was a visiting scholar at the School of Public Health at Harvard University, Leiden University (Holland) and London School of Economics. Sui specializes in the interdisciplinary field between medical science and law, medical science and bioethics. She has published/ co-authored three books, one of which is in English, and about 20 academic papers, 4 of which are in English.

**Margaret SLEEBOOM-FAULKNER** is Professor in anthropology at the University of Sussex (Brighton, UK). Her work focuses on nationalism and processes of nation-state building in China and Japan and on biotechnology and society in East Asia. She currently leads the Centre for Bionetworking and two projects on 'Bionetworking in Asia' focusing on international science collaboration in advanced stem cell therapies (funded by the ESRC, 2011-2014) and in biobanking in the life sciences and hospitals (financed by the ERC, 2012-2017) (see: <http://www.centreforbionetworking.org/>) Margaret has set up and directed the Socio-genetic Marginalization in Asia Programme (SMAP) in collaboration with the IIAS and the ASSR (2004-2009) and co-led a project on International Science and Bioethical Collaboration (ISBC), a joint research project with the Universities of Cambridge and Durham. She publishes widely on the socio-science aspects of new genetic, regenerative medicine and medical technologies, on issues of ethnic and national identity in Asia, and on the history of academia and science in China in international journals. (see: <http://www.sussex.ac.uk/profiles/192052>)



## Trash or Treasure? Sociotechnical Imaginaries and Biobanks in China

**H Aidan Chen**

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This paper draws on Jasanoff and Kim (2009)'s concept of "sociotechnical imaginaries" to explore the development and governance of biobanks in China. In the post-genomics era, a large number of donors' biological samples and associated data collected in biobanks are envisioned as essential components in achieving translational medicine. As has other countries, China has put more effort in biobank development in recent years. I show on one hand the anticipatory discourse of biobanks in the Chinese media, and biobanks' promissory future for translational research and personalized medicine as demonstrated by science and technology policies. On the other hand, scientists and regulators have realized that many biobanks in China have serious problems with the sample quality, and some of biobanks are actually "dead repositories" for samples that have hardly been used. Their imaginaries of biological samples as either "trash" or "gold" were reflected in discussions of the design, construction, and development of biobanks. The paper argues that the tensions between various sociotechnical imaginaries of biobanks as an emerging medical technology lead to individualized governance strategies by single biobanks and larger networks in China.

**Haidan Chen** has a joint appointment as Research Fellow in the Science, Technology, and Society Research Cluster at the Asia Research Institute, National University of Singapore (NUS) and a Fellow at Tembusu College, NUS. She received her PhD in Philosophy of Science and Technology from Zhejiang University, China. She was a visiting postgraduate researcher at the Institute for the Study of Science Technology and Innovation (ISSTI), the University of Edinburgh, and a visiting fellow at the University of York, the University of Vienna, and the Brocher Foundation, Switzerland. Her current research relates to the governance of biomedical research in China, in particular stem cell translational research, biobanks, and biomarkers, and the public perception of biobanks. More generally, her research interests embrace science and technology studies, bioethics, and biomedical innovation.

## Good Quality – The Routinisation of Sperm Banking in China

### **AYO WAHLBERG**

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How should we account for the dramatic (yet by no means self-evident) rise and consolidation of Assisted Reproductive Technologies in China? Two possible analytic routes stand out: One might venture to explain it in terms of a framework of globalization where such “technologies are rapidly globalizing to pronatalist developing societies, where children are highly desired, parenthood is culturally mandatory, and childlessness socially unacceptable” (Inhorn 2003); or one might explore processes of standardization which “aim[s] to render the world equivalent across cultures, time, and geography” (Timmermans and Epstein 2010). However, while global standards and flows have certainly played a crucial role in the consolidation of ART in China, in this paper I propose we can gain analytical traction from turning such approaches on their head by asking a ‘bottom up’ question of how do ARTs gain a foothold in a particular legal, cultural and socio-economic setting, which is to ask, how do they become routine? By routinisation I do not so much refer to processes by which medical procedures come to be fixed in ‘proper’ patterns or sequences, rather I point to the mundane, every day practices that sustain and enable ART, involving buildings, laboratory equipment, cleaners, nurses, doctors, laboratory technicians and the like. Taking the example of sperm banking in China, I suggest that tracking routes of routinisation can help us to account for the ‘difficult birth’ (cf. Franklin and Johnson 2011) of ART in China. I show how sperm banking in China has been made up through acts of pioneering (moral and technological), political lobbying, procurement and maintenance of laboratory equipment, training and rostering of staff, development of Standard Operating Procedures, recruitment and screening of donors and the logistical administration of storage and distribution. It is through such mundane practices that the jingziku (sperm bank) has become a repository of life in China.

**Ayo WAHLBERG** is Asian Dynamics Initiative Postdoctoral Fellow at the Department of Anthropology, University of Copenhagen. His research focuses on how concepts, objects and subjects co-circulate in the stabilization and contestation of certain medical fields, such as reproductive medicine (in China) and traditional/alternative medicine (in Vietnam and the United Kingdom). He is currently carrying out a three-year collaborative Sino-Danish research project entitled “Exchanging good life – an ethnography of sperm banking in China” funded by the Danish Council for Independent Research. Publications include the co-edited volumes *Contested Categories: Life Sciences in Society* (2009) and *Southern Medicine for Southern People: Vietnamese Medicine in the Making* (2012) as well as numerous journal articles. Ayo holds a PhD in Sociology from the London School of Economics.

## Experimental Postsocialism – The Hospital as Export Zone and Knowledge Park in Reform Era China

**MELINDA COOPER**

Department of Sociology and Social Policy, The University of Sydney, Australia  
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Recent scholarship on China has highlighted the deep conceptual foundations and long-standing political importance of applied experimentalism in the history of the Chinese Communist party. Sebastien Heilmann and Elizabeth Perry (2011) trace the intellectual origins of this distinctive policy style to the influence of American pragmatism amongst Chinese intellectuals and activists - first liberal then Communist - in the early 20th century. The pragmatist philosopher John Dewey toured the major Chinese cities and universities between 1919 and 1920, where he delivered a series of lectures on the importance of the experimental method to modern science. These lectures had an enduring influence on Chinese intellectuals of all political persuasions and were particularly important to the development of Mao's thinking on practice. If we follow the argument of Perry and Heilmann, postsocialist reformers such as Deng Xiaoping and his successors have not abandoned the legacy of communist policy making but have instead reverted to the period of radical experimentalism which characterized the Communist Party up until the mid 1950s. Deng Xiaoping, for example, was fond of characterizing post-1978 economic reform as a "large-scale experiment" which called for an inductive method of local learning through practice. In this way, he harked back to the high-point of Maoist experimental practice even while overseeing a radical shift in political objectives from the creation of a socialist state to the implementation of a market economy through socialist institutions.

For the purposes of my argument, however, the analysis of Chinese social experimentalism offered by Heilmann and Perry needs to be pushed still further to take account of the enduring influence of pragmatism on the understanding of actual medical practice in China. After all, when Chinese medical doctors and Western-style practitioners clashed over professional status and epistemological distinction during the 1920s and 30s, the conflict between the two was framed in terms of the Deweyian distinction between experience and experiment. In post-Mao China, the idea of a post-socialist experimentalism is most forcefully at work in efforts to position China at the forefront of biomedical and pharmaceutical innovation.

This paper looks at the PRC's recent policy initiatives on "indigenous innovation" as an example of experimental postsocialism in practice. It identifies two events as critical to an understanding of this project: first, the creation of high tech zones such as Beijing's Experimental Zone for New Technology and Industrial Development (later renamed Zhongguancun Science Park) and Zhangjiang Life Science Park in Shanghai in the late 80s and early 90s; and second, the redefinition of the large urban hospital as a site for clinical trials. This paper examines the promise and the reality of China's experiments in biomedical innovation and examines emerging tensions between health care and health innovation in the urban hospital.

**Melinda COOPER** is a Senior Research Fellow at the University of Sydney, Australia. She is the author of *Life as Surplus* (Washington University Press, 2008) and, with Catherine Waldby, of *Clinical Labour: Tissue Donors and Research Subjects in the Global Bioeconomy* (Duke University Press 2013). She is currently undertaking research into the globalisation of clinical trials in China and India.

## “To Cure a Hundred Diseases”: The Curious Case of Chicken Blood Therapy

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This paper discusses Chicken Blood Therapy (jixueliaofa), a treatment that stirred much excitement in China during the Cultural Revolution but remains surprisingly unknown in Western scholarship. Though the “therapy” consisted of a simple injection of the blood of chickens into humans, it was believed to have remarkable and wide-ranging curative effects. It was also a mainly urban phenomenon, beginning in Shanghai, and quite divorced from the more famous barefoot doctor program of the Chinese countryside. My paper will place this therapy in the context of a culture of injection of various animal tissues which hybridized “traditional” or “folk” Chinese medicine, with Western (particularly Soviet) bio-medical conventions, and was fueled by the unique cultural politics of early Communist China. This is part of my larger research project into the changing role of animal tissues and parts in TCM.

**Elizabeth CHEE Pui Yee** is one of the first two students enrolled in the Edinburgh University and National University of Singapore (NUS) Joint PhD Programme. Previously an MA student in the NUS Department of History, where she completed a thesis on art education in Meiji Japan, she is currently researching the use of animal parts in Traditional Chinese Medicine (TCM) from an historical and anthropological perspective. Her co-supervisors are Drs Francesca Bray and John DiMoia. Elizabeth is also the recipient of a scholarship attached to the Ministry of Education (MOE) Tier 2 Grant “Asian Biopoleis”, which provides the base funding for this conference.

## Biotechnology and Schizophrenia: The Continuous Function in Immunological Manipulation

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The next stage of research into the *sites* of biotech and science takes the inquiry into the field of neurobiology. Almost a century of research into the suspected links between mental disorder and immunological deficiency has achieved until recently at best inconsistent or temporary success and at worst fatal consequences of attempts to treat patients accordingly. This history reveals both developing attitudes towards mental health and increasing sophistication in the functioning of immunological aspects of brain genes. In one example of many, scientists have recently produced a mouse with schizophrenia by deleting the ErbB4 gene from interneurons (brain cells whose function is that of inhibition). As a consequence the mouse exhibits behaviour analogous to the aberrant behaviour of people suffering from schizophrenia (including disorders in complex reasoning and in decisions about appropriate social behaviour). The experiment is grounded on a growing conviction in the scientific and medical community concerning the intrinsic link between the immune system and schizophrenia and so a growing awareness of the biological basis of the illness. The direction of treatment on the basis of this growing knowledge is of course towards improving the precision and effectiveness of medications used to treat it.

In this paper I will present a brief report on these developments in the context of the long history of treatments of mental health: psychiatry, counselling, clinics, hospitals, medications and adventures in both social integration and enforced segregation, particularly in South East Asia. The wider context imposes great complexities on our attempts to grasp the meaning of the biological dimension (and thus the biotechnological dimension) of social and individual emotional health. The framework puts to work the connection, which grounds previous iterations of what I call the “Bios-Polis Project,” between immunological structures in a biological sense and those in the political sense. Some critical analysis of work on psychiatric institutions for instance by Michel Foucault (*The History of Madness, The Birth of the Clinic*) and Deleuze and Guattari (*Capitalism and Schizophrenia*) are unavoidable.

**John W.P. PHILLIPS** is an Associate Professor in the Department of English Language and Literature at The National University of Singapore. He writes on aesthetics, critical theory, literature, philosophy, science and technology. He is currently writing on immunological structures in mathematics, bioscience, and philosophy. Selected books: he is the author of *Contested Knowledge: A Guide to Critical Theory* (Zed, 2000), and the co-author with Ryan Bishop of *Modernist Avant-garde Aesthetics and Contemporary Military Technology: Technicities of Perception* (Edinburgh University Press, 2010). He is a co-editor of *Reading Melanie Klein* (Routledge, 1998), *Postcolonial Urbanism: Southeast Asian Cities and Global Processes* (Routledge, 2003), *Beyond Description: Space Historicity Singapore* (Routledge, 2004), and *The New Encyclopaedia Project, Volume 1: Problematizing Global Knowledge* (Sage, 2008).

## Networking BGI and Realigning Biopolis

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The October 2010 decision to "industrially-align" the seven biological research institutes of Biopolis came like a Friday decision in the corporate world: suddenly. There have been, now, two years of anxiety and downsizing as budgets were withheld and mortgaged, but the Genome Institute of Singapore has re-emerged with a new set of networks, pipelines and collaborations with clinicians on the one hand and with biotechs on the other hand. The focus has shifted to the cell, the brain, and aging as both local and transnational agendas shift. This paper will provide a preliminary mapping of the new science research terrain and challenges as a follow up to an earlier paper on the period up to 2010.

**Michael M.J. FISCHER** teaches at MIT and has been the inaugural Ngee Ann Visiting Professor at NUS this spring, teaching with the Tembusu College Staff a course on Biomedicine and Singapore Society. At MIT he is the Andrew W. Mellon Professor in the Humanities and Professor of Science and Technology Studies. In Singapore he has been doing field work on Biopolis, and especially the Genome Institute of Singapore.



## Big Biology in Motion: The Sociological Anatomy of the Protein 3000 Program in Japan

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The assessment of specific aspects of technoscience entails consequences in terms of both retrospective technical reasoning as well as social responsibility. This duality can clearly be seen in cases involving medical accidents and nuclear disasters, where the act of assigning the cause of such failure often requires a sort of tug-of-war between technical analysis and the attribution of legal responsibility (Perrow 1984; Reason 1997; Law 2003). This consideration suggests that the particular process of judging a certain technoscience as either a success or a failure by itself can provide ample foundation for the research of expectations and subsequent collapse.

In this paper, my investigation will focus on one research project, the Protein 3000 Program, launched by the Japanese government in 2002. This was the largest biological project in Japan, involving numerous structural biologists determining the basic structures of 3000 proteins from the five years leading up to 2007, spending 53.5 billion yen, or 618 million dollars. This project, however, has been generally viewed by concerned scientists as an awkward failure and has attracted criticism from various corners of society.

Analysis of such pronounced criticism, however, reveals an unexamined standard applied by these critics in assessing particular technoscientific practices. This standard differs from those of policy makers and others involved in this program. Attention should also be paid to the fact that this program itself is the result of what was considered a “failure” of the Japanese science policy to make a visible contribution to the Human Genome Project (Kishi 2004). This perception of failure on the global stage of competition is one of the most significant driving forces promoting this version of post-genomic science, which was considered as a sort of “counteroffensive” to previous policy failures (Fukushima, forthcoming).

In keeping with the tradition of the sociology of accidents and that of expectations (Van Lente 1993; Borup et al. 2006), I will reveal that beneath its simplistic façade, the discourse around this program has a complex, multilayered structure of meaning that, in this case, is interrelated through a variety of issues. These include the problematic analogy of high-throughput research between the study of genes as codes and that of proteins with more complex four-dimensional structures, the meaning of conducting big science in biology as it differs from previous cases in big physics (Galison&Hevly 1994; Parker et al. eds 2010), and the different expectations of scientists and policy makers regarding their ideal outcome for such big projects. In this analysis, I will also argue the need to scrutinize the very notion of technological failure (Geels&Smit 2000) in the spatial-temporal context, which is not confined to instances involving rosy technological promises that eventually turned sour, but includes those in flux between apparent success and failure.

**Masato FUKUSHIMA** is Professor of social anthropology and STS in the University of Tokyo. He has committed to a wide range of researches on comparative religion, theory of body, learning and cognition, and social studies of science and technology. He has been to Java(Indonesia) and Thailand for research on religion and politics, and he was a visiting scholar to LSE, London and Centre de la sociologie de l'innovation, Ecole des Mines de Paris. Since 1990's his concern has been on the socio-anthropology of contemporary institutions such as mental institutions, nuclear reactors, emergency medical centers and recently life science laboratory and public research institutions. He is the author of *Constructing Body Socially* (1995), *Anatomy of Tacit Knowledge* (2001), *Religion and Society of Java* (2002), *Anthropology in the Time of Science and Technology* (2005), *Ecology of Learning: Experiment, Risk, High Reliability* (2010), *Factory of Truth* (forthcoming) in Japanese as well as articles like "Between the Laboratory and the Policy Process" (forthcoming) in *EASTS*, as a result of the Biopoleis workshop.

## The Emergence of Asia as a Research Area: From Nations to Networks

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Scientific collaboration has emerged as a key dimension for constructing the meta-geography of Asia. More than just physical topography, Asia has always been a conceptual framework whose imagined boundaries shift along with changing discourses on politics, economics, race, and culture. In the early 20th century, pan-Asian regionalism was a shared political ideology and identity against Western domination, uniting humanist intellectuals from China, Japan, and Korea to those as far as India, the Philippines and even Cuba (Karl, 1998). By the end of the Cold War, rapidly developing tiger economies defined an exceptionalist Asia through greater economic regionalization, integration, and interdependence, embodied by pan-Asian organizational bodies such as APEC. At present, a pressing issue is whether scientific and technological collaboration is redefining Asia as an emerging research area. This paper employs both historical and quantitative evidence to mutually validate the emergence of Asia as a research area.

**Philip CHO** examines how cross-cultural differences in cognition are reproduced in social networks and historically change. His publications include historical and ethnographic studies of scientific practice in Asia; laboratory experiments on mathematical cognition; and quantitative modeling of the migration of research networks. He draws on a background in cognitive neuroscience from the Massachusetts Institute of Technology and history and sociology of science from the University of Pennsylvania. In 2010, he established the Culture and Cognition Program at the National University of Singapore. With a grant from the Global Asia Institute, he is the principal investigator of a project on Mapping the Technological and Cultural Landscape of Scientific Development in Asia. This involves the development of novel data mining software and quantitative methods for studying network behavior. In 2013, he received a grant from the Templeton Foundation through Oxford University for collaborative research on the cognitive basis of rituals and the development of religious communities in Asia.

## Why Singapore Trumps Iceland

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Why do Singapore-based researchers compare their genetic database to Iceland's deCODE project? What are the different codes and values built into in Asian DNA databases? What do genetics in Asia mean when they say "This is where the variants are"?

This talk tracks the hunt for genes "in nature, or in the wild," i.e. by scientists in Biopolis (Singapore) a biomedical frontier in Asia. The assembling of DNA data, I argue, is not only about scientific practice, but a materialization molecular politics that deferring to the logic of neoliberal governance, aims to optimize life. The biomedical apparatus seeks to capture the spontaneity of life and submitting it to the calculation of markets.

Drawing on the research among Singapore-based geneticists, I investigate their discourse of Asian DNA being "more valuable" than DNA from Europe. I analyze their how calculations of risk probabilities and potentialities for serious diseases, and an elastic use of the ethnic heuristic, are critical mechanisms for enhancing the representative and economic powers of their genomic data. By assembling an ethnic-differentiated databank, Asian scientists can claim better representation of larger collectivities in the world than competing databases.

**Aihwa ONG** is Professor of Socio-cultural Anthropology and Asian Studies at the University of California, Berkeley. She also serves on the Blum Center for Developing Economies and Global Metropolitan Studies on campus. Her research examines how the flows of capital, technology, and peoples shape emerging global milieus in the Asia Pacific. Aihwa is the author of *Spirits of Resistance and Capitalist Discipline 2nd Edition* (2010); *Flexible Citizenship* (1999); *Buddha is Hiding* (2003); and *Neoliberalism as Exception* (2006). Recent co-edited volumes include *Global Assemblages* (2005); *Asian Biotech* (2010); and *Worlding Cities* (2011). Her works are translated into German, Italian, French, Spanish, Japanese, and Chinese. The recipient of book awards and major grants, Aihwa has lectured in universities around the world. In recent years, she was visiting professor at the National University of Singapore and at Yonsei University in Seoul. In 2009-2011, she served as Chair of the US National Committee on the Pacific Science Association.

## Cultivating Local Talent for the Biomedical Sciences in Singapore

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At the 2012 Asian Biopoleis Workshop, we presented preliminary findings from a project undertaken by three (then) Tembusu students under the Undergraduate Research Opportunity scheme. Through interviews and focus groups with university students, the project aimed to document what it is liked to be groomed for a career in the sciences in general, and the biosciences in particular, in contemporary Singapore. Famously, such grooming happens around the A\*STAR's National Science Scholarship, which allows talented young people to pursue undergraduate and PhD studies abroad – after which they are expected to take up leadership positions at A\*STAR or in the broader ecosystem of the biosciences back home. But grooming starts before one's university days, with science challenges, Triple Science, and, most prominently, A\*STAR student attachment programmes, for teenagers to demonstrate their aptitude for science. In this paper we develop last year's presentation and examine what 'doing science' means to those cultivated as local talent, against the backdrop of an evolving Biomedical Sciences Initiative and with reference to how these young people reconcile their own aspirations with their sense of what Singapore needs and wants from them as scientists.

**Catelijne COOPMANS** is a Fellow and Director of Studies at Tembusu College, and a Research Fellow at the Asia Research Institute - both at the National University of Singapore. Her research is in the field of Science and Technology Studies. Most of her work draws on ethnography and discourse analysis to examine emerging medical imaging applications (and other visual technologies) and the various notions of insight and value that accompany them. Within the Asian Biopoleis project, she has been investigating the social and cultural dynamics of knowledge production and technological innovation in the domain of eye research, for which Singapore has built an international reputation. She is also collaborating with Tembusu undergraduate students on research regarding the cultivation of local talent for the biomedical research sector in Singapore.

**Rachel NG** is majoring in sociology, **Christabel TAN** in life sciences, and **Dilu WEWALAARACHCHI** in psychology, all at the National University of Singapore. In 2012, the three enrolled in the Senior Seminar on Biomedicine and Singapore Society at Tembusu College, and afterwards embarked on a summer project (under the Undergraduate Research Opportunity scheme) with Dr Catelijne Coopmans on the cultivation of local talent for the biomedical sciences industry in Singapore. The paper presented at this workshop is the result of their joint work.

## Open Source Hardware (OSHW) Tinkering with Biology in Asia: Supporting Biotech Research in the Global South

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The convergence of ICTs with emergent biotechnologies, especially bioinformatics, has its counterpart in the alternative culture of circuit board customization and hacking, which created some unique opportunities for research in developing countries. The global DIYbio hardware hacking enabled cheap lab equipment used Indonesia, Nepal, and various hacker spaces around the world, which support citizen engagements with biotechnology. In my paper I will follow case studies of how open hardware enables DIYbio in Indonesia to describe the global networks behind such hardware solutions. While the official biotech industry operates under the strict patent logic of the global biotech business, the emergent DIYbio movement in the region explores different possibilities of doing science. It supports open licenses and open source approaches, which created conditions for alternative and community based research and development bringing closer policy and science, community building and prototype testing.

**Denisa KERA** is Assistant Professor at the National University of Singapore and Asia Research Institute fellow. In her present research she brings together Science Technology Society (STS) studies and Interactive Media Design. She builds design prototypes and critical probes to reflect upon issues in STS and creates tools for deliberation and public participation in science. She studies science community labs and alternative R&D places (Hackerspaces, FabLabs) around the world following the convergence of open source technologies and biotech around (Do It Yourself) DIYbio movements, consumer genomics and various citizen science projects. She has extensive experience as a curator of exhibitions and projects related to art, technology and science, and previous career in internet start-ups and journalism.