For Official Use **DSTI/STP/BIO(2008)23/REV1**

Organisation de Coopération et de Développement Économiques
Organisation for Economic Co-operation and Development **14-Nov-2008**

English - Or. English

DIRECTORATE FOR SCIENCE, TECHNOLOGY AND INDUSTRY
COMMITTEE FOR SCIENTIFIC AND TECHNOLOGICAL POLICY

DSTI/STP/BIO(2008)23/REV1
For Official Use

Working Party on Biotechnology

CONSOLIDATED DRAFT GUIDELINES FOR HUMAN BIOBANKS AND GENETIC RESEARCH DATABASES

19-21 November 2008
OECD Headquarters

This version of the draft Guidelines for Human Biobanks and Genetic Research Databases provides a consolidation of the two documents prepared for Council [See DSTI/STP/BIO(2008)31 and DSTI/STP/BIO(2008)34]. This document is provided only for illustrative purposes and presents the draft Guidelines in the format that they would be published once approved by Council.

For further information, please contact: Ms. Christina Sampogna, Tel: +33 (0)1 45 24 98 21;
Fax: +33 (0)1 44 30 63 36; E-mail: christina.sampogna@oecd.org

JT03255294

English - Or. English

NOTE BY THE SECRETARIAT

This document presents the draft OECD *Guidelines for Human Biobanks and Genetic Research Databases* in a consolidated form. It is provided to delegates for illustrative purposes as it presents the *draft Guidelines* in the format in which they will be published once adopted by Council.

For the discussion on the draft Guidelines (Item 17 on the WPB Agenda) the key documents are [DSTI/STP/BIO(2008)31], which contains the draft Council Recommendation, and [DSTI/STP/BIO(2008)34], which contains the Introduction, Annotations and Glossary.

GUIDELINES FOR HUMAN BIOBANKS AND GENETIC RESEARCH DATABASES

INTRODUCTION

These Guidelines aim to provide guidance for the establishment, governance, management, operation, access, and use of human biobanks and genetic research databases (HBGRDs), which are structured resources that can be used for the purpose of genetic research and which include: a) human biological materials and/or information generated from the analysis of the same; and b) extensive associated information.

The Guidelines are intended to assist both OECD and non-OECD governments in the development of policies applicable to HBGRDs. Moreover, they are intended to provide guidance to private and public sector human biobanks and genetic research databases. These Guidelines also aim to facilitate national and international networks of HBGRDs to share good practices, good governance experiences and to encourage transparency.

Although it is intended that this Recommendation is applied as broadly as possible, it is recognised that it may not be fully applicable to all HBGRDs[, given the diversity of structure, purpose and operation. While this Recommendation is intended to be applicable to pre-established HBGRDs, in practice the application of some of its principles and best practices may not be fully feasible.] [There is a wide variety of HBGRDs and the principles and best practices cannot reflect the full range and diversity of collections and circumstances. Because of the variation in structure, purpose and operation of collections, therefore, a collection may find that some or all of these Guidelines are not applicable to it and do not provide relevant guidance. For example, the application of some of the principles and best practices may not be fully feasible in pre-established HBGRDs.]

This Recommendation may also not fully apply to HBGRDs established primarily with the objective of [obtaining market authorisation] [carrying out research and development] for a medical product, diagnostic or device. It is not intended to be applicable to resources established principally for non-research purposes, such as for diagnosis, therapeutic, treatment, forensic, transplantation, transfusion, audit, public health surveillance, quality assurance purposes or as teaching materials.

Research in Human Health and Human Biobanks and Genetic Research Databases

Research involving human genetic or genomic information analyzed in conjunction with other personal or health data has become increasingly important for the understanding of complex (multi-factorial) diseases. Such research will be critical to improvements in detection, prevention, intervention, diagnosis, treatment, and cures, including for new products and services. To support these research endeavours, great emphasis has been placed on the establishment and sharing of resources comprised of data, human biological samples and information derived from the analyses of those samples.

There is strong consensus in the scientific community that progress in understanding disease will be critically dependent on the establishment, harmonisation and broad use of HBGRDs. Current uses of

HBGRDs are already contributing significantly to our understanding of genetic and environmental factors that influence disease risk and treatment including a better understanding of the reasons for drug reactions.

To serve these purposes, HBGRDs may be established in diverse forms. For example, HBGRDs may be any of the following, or a combination thereof: cross-sectional, longitudinal, large-scale, disease-specific, or population-based. Such data resources will provide platforms for international collaboration on a scale not previously attained.

It is clear that wide access to such data and materials for biomedical advances must be balanced by concern for the interests of research participants (*i.e.*, those individuals from whom biological materials and data are obtained). The ability to establish biobanks and genetic research databases will depend in part on participants' willingness to contribute. Research must respect the participants and be conducted in a manner that upholds human dignity, fundamental freedoms and human rights and be carried out by responsible researchers.

Nature and Structure of the Document

The Recommendation on Human Biobanks and Genetic Research Databases, which incorporates a series of Guidelines, covers a broad reach of activities and are intended to be used as appropriate to the circumstances. However, this Recommendation is not intended to cover all aspects of HBGRDs. Further complementary technical issues are covered by the OECD *Best Practice Guidelines for Biological Resources Centres*[1] which address quality assurance aspects for the maintenance and supply of high quality biological materials.

The Recommendation on Human Biobanks and Genetic Research Databases was adopted by the OECD Council on xxx.[2] This Recommendation and its Guidelines are intended to be evolutionary in nature and should be reviewed in light of relevant scientific and societal developments. Thus, there will be a need for the Recommendation and its Guidelines to be assessed, five years after adoption at the latest, and periodically thereafter, in order to ensure that they are fostering the desired objectives. They should at all times be read and applied in a purposive manner.

Part One sets out Principles and Best Practices applicable to HBGRDs. The Principles provide guidance and the Best Practices offer more concrete applications, expand upon the Principles or provide additional considerations. Part Two contains Annotations which provide clarifications, explanations, and illustrations of the Principles and Best Practices found in Part One.

1. OECD (2007), *OECD Best Practice Guidelines for Biological Resources Centres*, published on the responsibility of the Secretary-General.

2. While a Recommendation of the OECD Council is a non-legally binding instrument, it represents an important political commitment on the part of the Member countries.

PART I: PRINCIPLES AND BEST PRACTICES

1. General Elements

Principles

1.A The objective of a HBGRD should be to foster research [falling] within applicable legal frameworks and ethical principles.

1.B The HBGRD should strive to make data and materials rapidly and widely available to researchers so as to advance knowledge and understanding.

1.C Throughout its existence, the operators and users of the HBGRD should respect human rights and freedoms and secure the protection of participants' privacy and the confidentiality of data and information.

1.D The operators of the HBGRD should consider and minimise risks to individuals, their families and potentially identifiable populations or groups whose specimens and data are included in the HBGRD.

1.E A HBGRD should be established, governed, managed, operated and used in accordance with applicable legal framework and ethical principles. [Secretariat Note: should this be combined with 1A?]

1.F The HBGRD should be established, governed, managed and operated in such a manner as to ensure that the collection and use of participants' human biological materials as well as all data are scientifically, legally and ethically appropriate. [Secretariat Note: this appears to overlap with 1E].

1.G The HBGRD should develop and maintain clearly documented operating procedures and policies for the procurement, collection, labelling, registration, processing, storage, tracking, retrieval, transfer, use and destruction of human biological materials, data and/or information.

1.H Given the significant resource implications of establishing and maintaining a HBGRD, the practical and financial feasibility of the HBGRD should be assessed and the financial resources to support the infrastructure should be secured, as early as possible.

1.I The operators of the HBGRD should be explicit and transparent about the nature and source of its financing/funding.

Best Practices

1.1 The operators should make available information on the scientific rationale underlying the HBGRD, and on the [scientific and business] uncertainties and risks associated with the establishment, operation and use of the HBGRD.

1.2 The HBGRD should have in place protocols and processes to protect participant's personal and medical information, including, but not limited to genetic information.

1.3 Measures should be taken to avoid discrimination against or stigmatisation of a person, family or group, whether or not they have contributed to the HBGRD.

1.4 While participants should not be paid for their participation in or the donation of their human biological materials to the HBGRD, reimbursement of reasonable costs incurred in order to contribute to the HBGRD is acceptable. Such compensation should not be of a magnitude so as to provide inducement to participate.

2. Establishment of HBGRDs

Principles

2.A The purpose(s), both current and future, of the HBGRD should be clearly formulated, and communicated as early and widely as possible, especially to potential participants and users.

2.B The operators of the HBGRD should ensure that it has sufficient professional staff and resources to operate effectively in all aspects.

2.C The operators of the HBGRD should develop a strategy for ensuring its long term sustainability, which also addresses the event that funding is terminated or its nature changed.

2.D In the establishment of the HBGRD, the operators should consider which relevant stakeholders, including the general public, should be consulted [,if any].

Best Practices

2.1 The HBGRD should make information publicly available in easily accessible form detailing its background, purpose, ethical and governance framework, name(s) of senior management, answers to frequently asked questions (FAQs) as well as contact information of a representative who will answer questions from the public.

2.2 The extent and types of consultations with relevant stakeholders should be based upon considerations of the nature and design of the proposed HBGRD, the risks involved to participants, their families and to identifiable groups, any particular sensitivities related to the individuals and groups under study, and of the types of research to be conducted with the HBGRD.

2.3 As relevant for the HBGRD, consultations should be carried out with a number of diverse stakeholders, including the public, patient groups, research institutions and industry, through appropriate and diverse means, and should cover a variety of relevant topics.

2.4 In carrying out consultations, the operators should disclose as much as is known about the possible future scope of the HBGRD.

2.5 The operators should clearly indicate to stakeholders the manner in which their input may influence the establishment and the future aims of the HBGRD.

2.6 Where a HBGRD foresees attracting private or foreign investment or entering in commercial collaborations, this should be clearly articulated and communicated before such collaborations have been established, especially to participants.

2.7 The HBGRD should ensure that it has appropriate staff and resources to maintain records, data and human biological materials appropriately, and to handle requests for access to data and human biological materials.

2.8 When establishing a HBGRD, the operators should develop criteria for sampling and participant selection.

2.9 When establishing a HBGRD, consideration should be given to future collaboration and cooperation, especially in regards to database compatibility and interfaces. Appropriate design elements providing for such compatibility and interfaces should be incorporated when creating the databases. The HBGRD should give consideration to using standardised approaches for the collection, storage and analysis of human biological materials and/or data so as to facilitate cross-HBGRD data exchange and sharing.

3. Governance, Management, and Oversight

Principles

3.A The HBGRD should be governed by the principles of transparency and accountability.

3.B The operators of the HBGRD should clearly formulate the governance structure and management responsibilities applicable to the HBGRD and should make available such information to participants, stakeholders and the general public.

3.C The governance structure should ensure that the rights and well-being of the participant prevail over the research interests of the operators and users of the HBGRD.

3.D Within its governance structure, the HBGRD should have a mechanism to review applications for access to the human biological materials and/or data.

3.E It is the shared responsibility of all HBGRD professional personnel, researchers and partners to carry out their activities in accordance with legal requirements and ethical principles, and it is the responsibility of the operators of the HBGRD to ensure this is accomplished. Specific roles and chains of responsibilities of those involved in the HBGRD's activities should be clearly delineated.

3.F A HBGRD should have in place oversight mechanisms to ensure that the governance, management, operation and use of the HBGRD comply with ethical, financial, and regulatory obligations.

3.G Participants should have access to an independent means of recourse for redressing breaches of ethical, financial, and regulatory legislation, policy and frameworks. [Secretariat Note: Principles 3E to 3G require clarification regarding the use of the terms "principles", "obligations" and 'frameworks"].

3.H The HBGRD should anticipate that over its lifespan there will be a need to review and modify its policies, protocols and procedures. Within its governance structure, the HBGRD should have in place a process for undertaking such review and modifications.

Best Practices

3.1 The establishment, governance, management, operation and use of the HBGRD and its protocols and processes for research activities should be approved or reviewed, as applicable, by an independent research ethics committee.

3.2 Review processes including research ethics committees or comparable oversight mechanisms should be in place for use in cases where human biological materials or data are to be used in a manner not

anticipated in the original informed consent process, including for previously collected human biological materials or data where the use might deviate from the original consent; for cases where informed consent may not have been obtained at the time of collection; for determining when to seek re-consent; and for use of human biological materials or data where consent was obtained using a broader or layered format for uses unspecified at the time of collection, especially in the case of large-scale genetic epidemiology studies.

3.3 A responsible position(s) should be identified to ensure compliance with the governing requirements of the HBGRD, including the legal, financial, ethical, policy and managerial requirements.

3.4 The individuals selected to be involved in the oversight procedure should be drawn from diverse areas of expertise of relevance to the nature and purpose of the HBGRD.

3.5 The operators of the HBGRD should ensure that participants have access to regularly updated information about the type of research being carried out with the human biological materials and data contained within the HBGRD.

3.6 HBGRDs should identify a responsible position(s) for ensuring the security and custodianship of human biological materials and data, including through the implementation of adequate protection measures.

3.7 The operators of the HBGRD should ensure that information is made publicly available about any significant modifications to the HBGRD's policies, protocols, and procedures, and that where these affect the interests of participants, there are appropriate mechanisms to inform participants about such modifications.

4. Terms of Participation

Principles

4.A Participant recruitment should be carried out in a non-coercive and equitable manner that respects individual freedom of choice.

4.B HBGRDs should obtain prior, free and informed consent from each participant. Where applicable, HBGRDs should provide for obtaining consent/authorisation from the appropriate substitute decision-maker, or for obtaining waiver of consent from a research ethics committee or an appropriate authority.

4.C During the informed consent process, HBGRDs should provide potential participants with sufficient information on the nature, implications, foreseeable risks and benefits of their participation, so that they can realistically assess the implications of their participation and can make an informed decision on whether to participate. This information should be presented so as to not constitute an improper inducement to participate in the research.

4.D Participants should be provided with explicit information on whether and under what circumstances the HBGRD may be obliged legally to provide their human biological materials and data, in whole or in part, to third parties (e.g., law enforcement agencies, employers, insurance providers) for non-research purposes.

4.E HBGRDs should give careful consideration to any special issues related to the participation of vulnerable populations or groups.

4.F HBGRDs should have a clearly articulated policy on feedback and the nature of the feedback, if any, that will be provided. This policy should address feedback of individual-level results, if any, as well as aggregate and general results arising from research carried out using human biological materials and/or data from the HBGRD.

4.G In the exceptional circumstances where participants may be provided with feedback of individual-level results arising from research, the HBGRD should provide clear information to the participant of the consequences of receiving such results and should inform the participant of their right to opt out from receiving such results. Non-validated results from scientific research using a HBGRDs' human biological materials and data should not be reported back to the participants and this should be explained to them during the consent process.

4.H The HBGRD should ensure that aggregate and general results of research conducted using its resources, regardless of outcome, are made publicly available either in the form of publications or through other means.

4.I HBGRDs should clearly articulate whether participants will be re-contacted during the course of the HBGRD's existence, the situations for which re-contact will be permitted, and the conditions that will govern re-contact.

4.J The HBGRD should inform participants of their right to withdraw, of the nature of and modalities for exercising that right, as well as the implications of and limits to exercising that right.

4.K The HBGRD should provide participants with information in regards to commercialisation of its resources, the modalities of such commercialisation, and the benefits, if any, the participant may receive.

4.L The HBGRD should provide participants with information about commercial products that may arise from research conducted using its resources**,** including human biological materials, data derived from the analysis of samples, data or other information provided by or about the participant. Information should also be provided on the benefits, if any, the participant may receive.

4.M The HBGRD should provide participants with information about its intellectual property policy.

Best Practices

4.1 The informed consent materials should be written in clear, concise and simple language.

4.2 The informed consent process should pertain to the human biological materials and data to be collected, the data to be derived from the analysis of samples, and the health and other records to be accessed, their intended uses, storage and duration of storage.

4.3 Throughout the lifespan of the HBGRD, the use of human biological materials and data should be consistent with the original informed consent, otherwise a new consent should be sought from the participant, or a waiver of consent should be obtained from a research ethics committee or an appropriate authority.

4.4 For HBGRDs established from existing collections, the operators should consider whether the intended scope and purpose of the HBGRD and intended research uses of the human biological materials and data are consistent with the original informed consent. Where the intended scope of the HBGRD or its intended uses are not within the scope of the original informed consent or none was obtained, the human biological materials and data may only be used if a new consent is obtained or alternatively, a waiver of consent is obtained from a research ethics committee or an appropriate authority.

4.5 Information regarding the participant's decision for the type of research for which their human biological materials and data are consented to be used should be incorporated into the HBGRDs information management system so that data and sample usage can be tracked.

4.6 [Where allowed by relevant laws and appropriate authorities, HBGRDs should consider using alternative consent models that will permit biological specimens and/or data to be analysed in the future with novel technologies or used to address currently unforeseen research questions.] [Where permitted by applicable law and when authorised by appropriate authorities, HBGRDs may consider using alternative consent models for carrying out analysis to address currently unforeseeable research questions, provided that the participant has been fully informed of the breadth of such a consent and provided that there are additional safeguards in place to ensure that participants are protected.]

4.7 HBGRDs involving participants who are minors should have a clear policy on whether, when and how the minor's assent will be obtained.

4.8 HBGRDs involving minors or individuals with impaired decision-making capacity as participants should have a clear policy on what steps will be taken once such participants become legally competent to consent.

4.9 HBGRDs should inform participants that they may exercise their right to withdraw without any explanations required and that there will be no negative consequences for themselves or their family in regards to the provision of healthcare services.

4.10 HBGRDs should have a clearly articulated policy about the effects, if any, of the participant's death or loss of legal capacity, and participants should be informed of this policy.

4.11 HBGRDs should have in place a process for recording a participant's decision in regards to re-contact.

4.12 Where the HBGRD has specifically offered and the participant has elected to receive feedback of individual-level results, and depending on the nature of the feedback, it is appropriate for a trained professional should provide this feedback, the necessary supportive services and/or counselling to participants.

4.13 Where appropriate, participants should be provided with the opportunity to communicate with representatives of the HBGRD or its designees to discuss its nature and scope.

4.14 Over the lifespan of the HBGRD, communication strategies should take into consideration the different needs of the participants. Consideration should be given to employing different formats and modes for providing information to participants.

5. Contents of HBGRDs

Principles

5.A HBGRDs should clearly articulate and communicate to potential participants the types of human biological materials and data which will be collected from them or from other sources, stored and used for research purposes.

5.B HBGRDs should make information publicly available about its resources of human biological materials, data and information that are accessible for research use.

5.C HBGRDs should have a clearly articulated policy on whether data will be accessed from health or other records, independently assembled, and whether or not these data will be linked with or stored in the HBGRD. Such a policy should also address the issue of secondary use of health and other records, especially when combined with other data. Where HBGRDs intend to access data from health or other records, it should ensure that participants are duly informed and that their informed consent for accessing such records is obtained, unless waiver of consent is granted by an appropriate authority.

5.D HBGRDs should develop a clearly articulated policy on the selection and collection of specimens and the means for minimising the risk of invasive procedures.

5.E HBGRDs releasing human biological materials and data should have a clearly articulated policy as to whether and how the results of analyses of such materials (e.g., genotypic data) should be returned to the HBGRD and how access to such results for further research will be managed, particularly if the results can be linked to other information about the participant. The policy should include the standard of quality applicable for incorporation of results into the HBGRD.

5.F All human biological materials and data should be subject to proper quality assurance measures at every stage of its processing to ensure high standards of quality in all HBGRD holdings.

5.G In order to foster the interoperability of systems and facilitate the scientific exchange of data and human biological materials, HBGRDs should collect, process, handle and store the specimens and data in a manner consistent with internationally-accepted technological standards and norms.

Best Practices

5.1 In its policy, the HBGRD should specify which types of data will be collected, including medical/health, biochemical, life-style, genealogical, family-history, genetic, physiological and other demographic and personal data, as well as specify the source of the data collected.

5.2 In the case that data are accessed from their health and other records, participants should be informed in advance, where possible at the time of consenting, about what types of data will be extracted from such records, by which entity, through which processes, and for which purposes the data will be employed. Consent and/or authorisation for access to and use of health and other records should be obtained as required by applicable law.

5.3 [For pre-established HBGRDs, before data from health or other records are accessed, authorisation for re-contact and re-consent, or waiver of consent, should be obtained from an appropriate authority.] [For pre-established HBGRDs, data from health or other records should only be accessed in accordance with applicable law or regulation. When relevant, authorisation for re-contact and re-consent, or waiver of consent should be obtained from the appropriate authority.]

5.4 The types of human biological materials and data collected and stored in the HBGRD should meet specified criteria [justifiable] based on the scientific objectives and the purposes of the HBGRD.

5.5 If the HBGRD will not perform specific types of tests or will not maintain specific types of data it should have a clearly articulated policy and should communicate this to participants. [Secretariat Note: such exclusions may be difficult to cover exhaustively. Refine?]

5.6 The HBGRD's policy on procurement, collection, labelling, registration, processing, storage tracking, retrieval, transfer, use and destruction of human biological material and data should take into consideration cultural heritage and/or religious beliefs known or disclosed by participants and/or their representative groups.

5.7 All of the HBGRD's holdings should be maintained and tracked through a data information management system that includes administrative data, the human biological materials and data derived from the analysis of these, phenotypic data, and any other information collected from or about the participant or their human biological materials.

6. Protection of Human Biological Materials and Data

Principles

6.A HBGRDs should be established, managed, governed, operated and used in such a way as to prevent any inappropriate or unauthorised access or use of participants' human biological materials and personal data and information.

6.B HBGRDs should establish policies and procedures for the protection of the human biological materials and data, especially those potentially permitting, whether directly or indirectly, the identification of the participant**.**

6.C Prior to the collection of human biological materials and data, HBGRDs should make available to participants general information about the level of protection to which their human biological materials and data will be subject and the means that will be employed for this protection.

6.D The HBGRD should have a clearly articulated policy on the duration of storage of the human biological materials and the data, recognising that the duration of storage may vary according to the nature and the potential uses of the specimen or data. Additional specific conditions may apply for human biological materials and data which form part of an application for market authorization of a medical product, diagnostic or device.

6.E Quality assurance measures should be in place, including conditions to ensure the continued operation of storage, security and confidentiality measures during the collection, storage, handling, transfer and destruction of the human biological materials and data.

Best Practices

6.1 A responsible position(s) should be identified for ensuring the protection of data and privacy.

6.2 Processing, handling and storage of human biological materials and data should be conducted in a manner that protects the privacy of the participant and the confidentiality of their specimens and data.

6.3 The HBGRD should consider the extent to which the genetic data held by them might allow, alone or in combination with other available data and reference samples, the participant to be identified. The HBGRD should establish a clearly articulated policy of whether certain data or combinations of data will not be made available and for which reasons.

6.4 Data protection should, where appropriate, involve the separation of information that can readily identify an individual from other data, including genotypic data.

6.5 HBGRDs should protect privacy and confidentiality through a combination of mechanisms, as appropriate, including for example secure storage of human biological materials and data, coding and encryption of these, logging of any access to specimen or data, data enclaves, and honest broker systems.

6.6 Where possible, participant identifying data should be encrypted from the point of collection through all phases of data handling including storage, manipulation and transfer of the data.

6.7 HBGRDs should have in place a robust infrastructure, consisting of both hardware and software components, so as to prevent unauthorised access to databases.

6.8 The HBGRD should formulate clear policies and procedures setting out the manner in which an individual participant can request information and data about him/herself that is contained in the HBGRD, how those requests will be handled, and which information and data, if any, can be made available. These policies and procedures should be made publicly available.

6.9 HBGRDs should ensure that only a restricted number of properly authorised staff, and in accordance with obligations of confidentiality, have access to information identifying or potentially identifying participants, that such access be monitored and documented and only be exercised when necessary for carrying out HBGRD-related functions.

7. Access

Principles

7.A HBGRDs should develop clear policies and procedures to enable access to human biological materials and data in their databases to support research. Access should be based on objective and clearly articulated criteria, and should be consistent with the participant's informed consent.

7.B Except when required by law, the HBGRD should not make accessible or disclose participants' human biological materials or data to third parties (*e.g.* insurance providers, employers, or law enforcement agencies) for non-research purposes.

7.C Given the potentially finite nature of some human biological materials, HBGRDs should formulate criteria for prioritising applications for access to the human biological materials.

7.D Unless strictly necessary, researchers should be provided access only to human biological materials or data that are coded or anonymised such that the participant cannot be identified and researchers should be required to not attempt to re-identify participants. The exceptional conditions under which researchers will be provided access to human biological materials or data that is not coded or anonymised should [,insofar as possible,] be clearly disclosed to participants during the informed consent process.

7.E HBGRDs should have a clearly articulated policy on the circumstances under which researchers using its database(s) will be allowed to contact participants directly.

7.F HBGRDs should require that access requests include a scientifically and ethically appropriate research plan.

7.G The HBGRD should have in place mechanisms to review uses of the human biological materials and data for consistency with the research uses agreed to by a participant.

7.H HBGRDs should only transfer human biological materials and data when the recipient has adequate standards in place regarding privacy of the participant, confidentiality of the data, and safety and good laboratory methods.

7.I HBGRDs should develop a clear policy on whether and how results from research carried out using human biological materials or data accessed from the HBGRDs will be returned to and incorporated into the HBGRD.

Best Practices

7.1 Different mechanisms should be employed to ensure that researchers are not inadvertently provided access to potentially identifying data, including, for example, by only permitting the querying of the database by HBGRD staff who return the aggregated results to the researcher or by permitting researchers to query only certain aspects of the data held by the HBGRD. Users of data should sign confidentiality agreements.

7.2 Consistent with the terms of participation, participants should only be re-contacted through a representative or designee of the HBGRD trained in dealing with sensitive issues and impartial in regards to the outcome of the research. HBGRDs should have in place policies and procedures for ensuring that such re-contacting is not unduly burdensome for participants. [Secretariat Note: is this consistent with 7E?]

7.3 HBGRDs should make information publicly available on their access policies and procedures and on the different projects that use human biological materials or data obtained from the HBGRD.

7.4 While HBGRDs may choose to have stratified access or fee policies, they should ensure that such policies are fair, transparent and do not inhibit research.

7.5 The terms of access for researchers to the whole or a part of the database(s) of an HBGRD should be set out in an access agreement

7.6 Where a HBGRD intends to provide access to the specimens and samples collected from participants, they should develop a material transfer agreement or other agreement appropriate for that purpose.

7.7 HBGRDs should ensure that data access requests and data distribution are consistent with the informed consent provided by the participant.

8. Qualifications, Education and Training

Principles

8.A The HBGRD should ensure that all of its personnel are knowledgeable about its goals and purpose and are made aware of duties to protect the privacy of participants and the confidentiality of data and human biological materials.

8.B The HBGRD should ensure that any conflict of interest involving its personnel are disclosed and suitably managed.

8.C The management of the HBGRD should be qualified by training and experience to carry out its mandate.

8.D The management of the HBGRD should ensure that personnel have the appropriate professional qualifications that meet recognised standards, experience, education and training and are assigned responsibilities commensurate with their capabilities.

8.E Technical staff should be responsible for the implementation of policies and procedures as established by the management of the HBGRD.

Best Practices

8.1 In light of the importance of ensuring appropriate and up-to-date knowledge of staff, the management of the HBGRD should develop and implement employee training. This should include training on technical matters, applicable law and ethical principles. It should also address the management of conflicts of interest and communication with participants and the public.

8.2 Training should form an integral part of a HBGRD's quality system and should be part of its quality manual.

8.3 The HBGRD should employ professional and technical staff with the appropriate competency to operate the equipment effectively and safely.

8.4 The HBGRD's personnel should sign agreements that set out their duties to protect the privacy of participants and the confidentiality of data and human biological materials.

9. Custodianship, Benefit-sharing and Intellectual Property

Principles

9.A The HBGRD should have a clearly articulated policy on whether participants retain any rights in the human biological materials and data and the nature of such rights.

9.B Where the HBGRD intends to retain rights to the participant's human biological materials and/or data, it should have a clearly articulated policy, these [Secretariat Note: clarification required about whether the reference here is to "rights" or "policy"] should be explicitly indicated to the participant and should be included in the consent document(s). Such a policy should be consistent with applicable law, and regulatory and ethical best practices.

9.C The HBGRD should have a clearly articulate policy in regards to benefit-sharing. Benefits arising from research using the HBGRDs resources should be shared as broadly as possible, in different ways including the sharing of information, licensing, or transferring of technology or materials.

9.D In recognition that the sharing of knowledge is one of the most important benefits to be derived from HBGRDs, they should endeavour to foster the exchange of information and research.

9.E The HBGRD should have a clearly articulated policy relating to the commercialisation of its own resources and/or of research results derived from those resources and the modalities of such commercialisation. [The policy should also explicitly set out whether participants and users will derive, if any, benefits from such commercialisation.]

9.F The HBGRD should have a clearly articulated policy in regards to intellectual property rights, which should address the rights, if any, applicable to the HBGRD, researchers and participants. [Secretariat Note; clarification of this principle required]

Best Practices

9.1 The sharing of benefits should encourage appropriate access to and use of human biological materials, data, and information and, as applicable, through building resource capacity or expertise including in non-OECD Members.

9.2 HBGRDs should develop a policy on whether tests or products arising from research using its resources might be shared with the community and/or the general population, and how such sharing will be effected.

9.3 Where appropriate, HBGRDs should have a system where benefit sharing agreements can be negotiated before a study begins, especially in the case of population-level studies where there may be vulnerable populations or unique concerns.

9.4 Researchers should submit to the HBGRD an annual progress report and a report at the termination of a research project. Such reports should list publications, patents filed, and patents issued arising from research accessing the HBGRD's resources**.**

9.5 Summary results arising from research conducted using the HBGRD's resources should be made available in easily accessible forms, such as through a newsletter or website.

9.6 The HBGRD should provide to researchers using its resources detailed guidance on the manner in which it wishes to be acknowledged.

9.7 In publications and presentations, researchers should acknowledge the HBGRD whose resources they have used or relied on.

10. Discontinuation of the HBGRD and Disposal of Materials and Data

Principles

10.A The HBGRD should plan for its possible discontinuation and should have a detailed policy setting out the manner in which the human biological materials and data that it holds will be dealt with in the event of its discontinuation.

10.B In the event that a HBGRD of scientific value can no longer be supported by its current operator, efforts should be made to transfer the human biological materials and data to another HBGRD or another entity.

10.C Once a HBGRD is no longer required or is no longer of scientific value and it has been determined that it will be discontinued, the human biological materials should be disposed of in an appropriate manner, consistent with the principles of consent, privacy and confidentiality.

10.D The HBGRD should dispose of human biological materials in accordance with legislation and regulation applicable to the disposal of human materials and bio-hazardous waste.

10.E The HBGRD should ensure that all information and data it holds is destroyed in a manner not permitting its recovery in accordance with the state of the art and technology.

Best Practices

10.1 The HBGRD's discontinuation plan should include details as to the appropriate disposition or destruction of the human biological materials and data should the HBGRD no longer meet a continued scientific need.

10.2 [Where the discontinuation of the HBGRD results from insolvency, the liquidator will be governed by applicable insolvency law. The operators of the HBGRD should be aware that the liquidator may be permitted or required to sell the assets of the HBGRD to commercial buyers, subject to any constraints in the participants' consent or under the law. The operators should consider what steps should be taken to provide for this and make information available to participants about the issue.] [The operator should consider what steps should be taken if the HBGRD were to be discontinued or sold as part of assets as a result of the operator's insolvency and, in particular, to what extent the participants' consent should provide for such an hypothesis. The operator should make information available to participants on the constraints that may apply, either as a result of the participants' consent or under the law, in case of sale [or discontinuation] of the HBGRD as a consequence of insolvency].

10.3 The HBGRD's policy on the destruction and disposal of human biological materials and data should take into consideration cultural heritage and/or religious beliefs known or disclosed by the participants, and/or their representative groups. [Secretariat Note: Repeats elements of 5.6]

PART II: ANNOTATIONS

Introduction

1. These Annotations aim to provide additional information, such as clarifications, explanations and examples, to the Guidelines on human biobanks and genetic research databases. The Guidelines provide guidance on the establishment, governance, management, operation, access, use and discontinuation of human biobanks and genetic research databases (HBGRDs).

2. The Guidelines aim to be useful for OECD and non-OECD governments in developing their frameworks applicable to HBGRDs. It is also the aim of these Guidelines to provide guidance to the initiators, operators, managers and users of a HBGDR on issues that arise from its creation through to its discontinuation.

3. In these Guidelines, HBGRDs are considered to be structured resources that can be used for the purpose of genetic research, which include: a) human biological materials and/or information generated from the analysis of the same; and b) extensive associated information. HBGRDs may be established in diverse forms and may have varying purposes. For example, HBGRDs could include large-scale collections of human biological material representative of a population or part of a population, epidemiological collections, collections of carriers of specific genetic mutations/markers/profiles, or collections of samples and data from individuals with a certain disease or taking specific medications. The resources of an HBGRD can be used for researching many diverse areas such as for the advancement of knowledge and understanding of human health and the life sciences. The use of HBGRDs' resources can also contribute to a better understanding of emerging "omics" fields, such as proteomics, transcriptomics, metabolomics, cytomics, and microbiomics.

4. Many pre-established collections (*i.e.,* existing/old collections) are continuing to be used in research today due to their great scientific value. Some of these pre-established collections are being employed for very different research purposes than those originally contemplated. In addition, while such collections may have been established in accordance with the legalisation, regulation, and policies of the time, these may be different from those currently applicable. While these Guidelines are intended to be applicable to these pre-established collections that are being re-used today, it is recognised that the application of some of the principles and best practices may not be feasible. In addition, there are other issues that arise with the use of these pre-existing collections which may not be addressed by these Guidelines.

5. These Guidelines cover a broad reach of activities. However, they are not intended to cover all aspects of HBGRDs. For example, the OECD *Best Practice Guidelines for Biological Resource Centres*[3] (BRCs) set out the quality assurance and technical aspects that should be addressed by BRCs to ensure the supply of high quality biological materials in a secure manner, particularly in the context of transnational exchanges. They provide technical best practices applicable for, amongst others, hygiene, equipment, storage conditions such as temperature, packaging of materials being provided, and quality audit.

3. OECD (2007), *OECD Best Practice Guidelines for Biological Resources Centres*, are published on the responsibility of the Secretary-General.

1. General Elements

6. The Guidelines recognise that the one of the fundamental objectives of a HBGRD should be to foster scientific research, recognising that research resources built on the contributions of participants should be used as effectively as possible to advance knowledge and understanding. Implicit in this principle is the presumption that it is potentially beneficial research that should be encouraged and fostered. HBGRDs should respect the rights of research participants.

7. The Guidelines recognise that a HBGRD will follow the applicable domestic legislation, regulation, frameworks and policies. Depending on the nature and scope of the HBGRD, it may also follow international guidelines or frameworks. Some HBGRD have found it useful to make information available about the frameworks within which they operate, including information about key instruments. For example, some HBGRDs come into being by an act of a legislator. In such situations, the statute creating the HBGRD could be made available, for instance, on the HBGRD's website.

8. The HBGRD will need to protect the privacy of the participant and the confidentiality of the human biological materials and data. In some jurisdictions, legislation may provide for the exceptional release of information. This may occur, for example, for public health emergencies or in case of outbreaks.

9. Research pertaining to a large portion of a population, especially sharing a number of common characteristics, may raise issues of potential discrimination and stigmatization. For example, an association between a specific heritage and a particular disease may lead to discrimination from, for example, employers or insurers. The initiators, operators and managers of the HBGRD should take into consideration such potential consequences not only for participants but also individuals, families and groups who may not have participated in the HBGRD. It should be disclosed that research results generated from population-based human genetic data may have repercussions on participants, their family, groups to which they belong or are part of and their community as a whole. Examples of repercussions may include loss of dignity or community stigmatization.

10. Prior to and in the course of its establishment, the creation of a HBGRD may involve the expenditure of considerable resources, including financial and human resources from public and/or private sources. In order to use effectively limited research funds, the scientific and financial feasibility of the HBGRD should be assessed as early as possible so as to halt projects that are not viable. This early assessment could also assist in securing long-term funding for the HBGRD.

11. The initiators should provide information on the scientific rationale underlying the intended HBGRD, as well as the scientific and business uncertainties and risks. The initiators should provide information to participants about the possibility that the purpose and scope of the HBGRD's research may evolve over its lifespan. It may occur that scientific findings can prove, for example, that the materials collected are no longer suitable for the rationale underlying the HBGRD. An example is where a HBGRD may decide to collect samples for DNA isolation, but later on find out that RNA is required to pursue its scientific rationale. The need for RNA was scientifically not foreseeable at the time of the specimen collection. The initiators may not be able to provide information on such scientific uncertainty at the time the HBGRD is established. In such circumstances, a HBGRD may refer to the continuous development of new technologies and new scientific findings which will require continuous adaptations/modifications of the HBGRD during the course of its existence.

12. In regards to business risks, initiators may choose to highlight that there may be changes over the lifespan of the HBGRD. Examples of areas where change may occur include in regards to ownership of the HBGRD. For example, over the lifespan of a HBGRD, public enterprises/universities may become

privatized or *vice versa*. A HBGRD could provide information that ownership could change and explain the uncertainties associated with the establishment and operation of the HBGRD.

2. Establishment of HBGRDs

13. The establishment of an HBGRD will involve expending considerable resources both prior to and in the course of its establishment. In order to ensure that resources are expended usefully, the establishment of the HBGRD should involve sufficient properly qualified professional personnel with relevant experience and with an understanding of the research and legal duties.

14. The initiators and operators of a HBGRD should develop a business plan and strategy for the HBGRD, which should take into account and set out the economic, financial and scientific feasibility and viability of the HBGRD. The HBGRD's operators should develop a business plan for the manner in which they intend to operate the HBGRD. The business plan can set out the goals and the manner in which these will be achieved. Preparing a business plan draws on a wide range of knowledge from many different disciplines including: scientific expertise, finance/accounting, human resource management, and operations management. The business plan could also set out the assumptions and risks inherent to the establishment of the HBGDR. The HBGRD's business plan should include consideration of the procedures for safekeeping all confidential information including personal and genetic data.

15. The Guidelines indicate that the HBGRD's operators should develop a strategy to ensure its long term sustainability. The strategy may include identifying operating costs, sources of funding, and any needs for additional funding in order to attain its objectives. The strategy should also set out the manner in which the operators will deal with unforeseen events, such as termination of funding. This could, for example, include information on the business plan both for the short term (*e.g.* for 5 years) as well as more long term planning.

16. The need for and extent of consultation will be determined by the purpose, nature and type of HBGRD. Determining the breadth of consultations will be influenced by the risks involved in sharing human biological materials and data and the sensitivity of the data being collected. The greater the breadth of targeted participants as well as the information and data collected by the HBGRD, the more important that broad consultations be carried out and with diverse groups. For example, stakeholders to be consulted in the course of the establishment of the HBGRD may include potential participants, representatives from the public, patients groups, industry, government, staff from other HBGRDs, and the research community. Such consultations may assist in communicating information about the nature, purpose, and scope of the HBGRD as well as in identifying needs and concerns. However, HBGRDs should guard against inflating the future and potential benefits of the HBGRD itself, and of participating in the HBGRD. Prior to carrying out consultations, the operators should consider the manner in which the input from stakeholders and the public will be taken into consideration.

17. Consultations may be carried out through diverse approaches and more than one approach may be used in the course of consultations. For example, consultations may be carried out through focus groups, surveys, interviews, and web-based discussions. Moreover, consultations should aim to cover a variety of issues. For example, scientific, legal, regulatory and ethical subjects, especially where concerns have been identified, should be covered.

18. Some HBGRDs may be established in collaboration with for-profit entities, for example to diversify their sources of funding. Additionally, it may be within the contemplation of the operators that the HBGRD could be involved in collaborations with commercial undertakings. In the event that such activities are contemplated, the HBGRD should clearly communicate this to potential participants at the earliest possible opportunity. While many participants may be indifferent as to whether or not the HBGRD

will be involved in commercial activities, some participants may choose not to participate in the HBGRD in such circumstances. For example, survey evidence from one jurisdiction found that citizens were less likely to participate or contribute where foreign companies were involved in the HBGRD.

3. Governance, Management, and Oversight

19. The Guidelines mention appropriate oversight mechanisms for ensuring its governance and compliance with the applicable law, regulation and policies. There are many models of mechanisms and they may carry out different functions. For example, there may be scientific oversight or ethical oversight. The different models may include, for example, institutional review boards, ethical review boards, scientific peer-reviewed committees, scientific advisory committees, *etc.*

20. The Guidelines state that oversight bodies of HBGRDs include expertise from diverse relevant fields, as well as representatives from different stakeholders. Expertise may be drawn from various medical and scientific specialities such as genetics/genomics, pathologists or laboratory medicine, epidemiology, as well as other fields such as law, ethics, informatics, accounting, *etc.* Depending on the nature of the HBGRD, representatives can also include non-experts or patient groups.

21. Participants should have recourse to independent bodies for redressing breaches of the applicable ethical and regulatory framework. The independent bodies may be established solely for the purposes of addressing breaches by the HBGRD or may be existing bodies, such as judicial courts or data protection commissioners.

4. Terms of Participation

22. The fundamental precept of prior, free and informed consent forms the basis for the involvement of human subjects in medical and scientific research. The common practice is to obtain the informed consent from the participant to be involved in the research. However, in some circumstances, informed consent may not be obtained directly from the participant due to incapacity to give such consent. For example, a minor or an individual with impaired decision-making capacity may not be able to provide the needed consent. In such circumstances, the informed consent may be sought from the appropriate substitute decision-maker, who is authorised to consent in the place of the participant. The conditions under which a substitute decision-maker will be able to give consent on behalf of the participant are subject to the requirements of applicable law and will vary from country to country.

23. In some circumstances, the requirement for informed consent can be waived. For example, in some countries, consent may be waived when it is impossible to obtain consent, the risk to the participant is deemed minimal, and the rights and welfare of the participant are not adversely affected. In such cases, the informed consent may be waived by an authorised entity such as a research ethics committee in accordance with the applicable law and regulations. For example, when re-use of human biological materials and data from old collections is being considered for purposes different than those for which these were originally collected, and it is impossible to re-contact the participants, a waiver of consent may be obtain from the appropriate authority, such as a research ethics committee.

24. [In some situations, a HBGRD may chose to obtain a relatively broad consent from the participant. The consent may be broader, for example, in terms of the different types of research projects to be carried out or in that the HBGRD may involve research questions that are unforeseeable at the time of the consent process. In some jurisdictions, alternative consent models may be used to obtain this broader consent. Alternative consent models typically involve that (a) the participant understand and consent to participating on this broader basis; and (b) additional safeguards are in place to ensure that the interests of the participant are protected. For example, the additional safeguards can include the use of oversight

mechanisms to verify that access to human biological materials, data and information is provided in a manner consistent with the participant's wishes.]

25. The purpose of the informed consent process is to obtain an individual's consent. Within certain cultures, however, it is more common that decisions are made at the community or group level rather than at the individual level. HBGRDs involving different cultural groups should take into account the difference approaches to decision-making. This may involve, for example, additional discussions with the community. While researchers should be cognisant of the importance of the involving the community or group, as appropriate, they must be respectful of the need to obtain individual consent.

26. Research involving vulnerable populations brings to light the need for additional consideration on the part of the HBGRD and researchers. Some examples of vulnerable populations can include minors, individuals with impaired decision-making capacity, the elderly, and military personnel. Amongst the additional considerations, the need to take into account the well-being of such participant is important. Another example of additional considerations can include the manner in which and the type of information that is communicated to an elderly or minor participant.

27. For minors, especially for very young children, it is common that a substitute decision-maker, often the parents, make the decision for their participation in research. However, in light of the minor's age and autonomy, the HBGRD could consider ways in which the minor can play a more active role. For example, in some jurisdictions, depending on their age, a minor may be able to provide their assent for participating in research.

28. Where substitute consent has been obtained from a participant lacking capacity (*e.g*. a minor or individual with impaired decision-making capacity), consideration will need to be given to what happens once the participant gains or re-gains capacity to consent (either as an adult or a competent minor). Consent may need to be obtained from the participant to continue in the research or to collect further data or human biological materials from them. For example, particular consideration may be needed in situations a minor has been recruited as part of family studies.

29. The goal of the informed consent process should be to provide information in a simple and easily understandable manner to the potential participant. During the informed consent process, it is important that participants should be provided with information on a variety of subjects. Depending on the nature of the HBGRD, these may include:

- The purpose of the HBGRD and foreseeable risks and benefits of taking part.
- The types of human biological materials and data that will be collected at enrolment and afterwards at subsequent follow-up points, which may include data that some participants consider especially sensitive (with options to avoid certain questions and measurements), and may be linked to health and other records.
- Where applicable, the fact that the HBGRD will be the legal custodian or owner of the human biological materials, data, and the collection, and that participants may not have proprietary rights in these.
- The intended uses of human biological materials and data.
- The general procedures and safeguards used to protect confidentiality and privacy.
- The policy with respect to benefit sharing.
- Where applicable, the expectation that commercial entities may be granted access to the human biological materials, data and information contained within the HBGRD's database(s).

- The policy and means for ongoing communication with participants.
- The information for contacting the HBGRD.
- The policy with regards to sharing human biological materials and data for non-research purpose with third parties such as insurers, employers or law enforcement agencies or for public health emergencies.
- The policy in terms of feedback of results to participants.
- The policy with respect to re-contact and the purposes for which such re-contact will be undertaken.
- The policy applicable to the use of human biological materials and data of a participant in the event that they become incapacitated or die.
- The storage and period of storage of the human biological materials and data.
- Their right to withdraw, the nature and modalities of this right and how to exercise this right, including options for dealing with any samples and non-anonymised data, that were given away to third parties (especially but not limited to researchers). Participants should be informed that the exercise of the right to withdraw will not entail consequences in regards to the provision of medical care.
- It should always be made clear to the potential participant that agreement or refusal to participate will not have any effect on any medical care that will be or could have been provided to them, nor prejudice or disadvantage them.
- The policy in regards to intellectual property.

30. The informed consent process should include information on the human biological material and data to be collected, their intended uses, storage, transfer and their disposal techniques. In addition, this information should take into consideration the participant's cultural and/or religious beliefs.

31. The HBGRD should develop a detailed policy of whether or not it intends to commercialise any resources, such as the human biological materials (*e.g.*, specimens, samples), data, information, the database(s), *etc.* It is important that this information be communicated to the participant during the informed consent process. This policy should also explicitly set out whether participants will derive any benefits from the commercialisation.

32. During the informed consent process, participants should have the opportunity to meet with HBGRD staff in order to discuss the nature and scope of the HBGRD. Where for reasons of confidentiality, the HBGRD's staff may not meet with participants, such participants should be provided with the opportunity to discuss with appointed designees. The HBGRD should ensure that such meetings are fair and neutral and do not, either directly or indirectly, create the potential for participants to feel pressure to participate in the HBGRD. HBGRDs should ensure that potential participants are not placed under time-constraints for providing their consent. As well, HBGRDs should remind potential participants that their refusal to participate will not result in sub-optimal care or discrimination of any kind.

33. While the goal of the informed consent process should be to provide as much information as is relevant, the consent document should remain straight-forward, readable and accessible. HBGRDs should aim to make the informed consent document publicly available. However, for certain HBGRDs, there may be protected or proprietary information in the consent form that cannot be rendered public. Participants

should be given time to reflect on the information provided before being asked to sign the consent document. [Participants should also be provided with a copy of their signed consent document.]

34. In developing the consent document, consideration should be given to the different needs of participants especially for those who are less educated, elderly, or who are not native speakers. Where relevant for the potential participants, the consent document should be translated into their native language/mother tongue. For example, for a HBGRD collecting human biological materials and data from a specific community whose mother language is not the official language of the country, it may be desirable to translate the consent document and relevant information into the mother language of that community.

35. In its policy on feedback, a HBGRD should set out its approach to aggregate and generalised research findings. The establishment and broad use of HBGRDs will contribute to numerous objectives including the scientific community's pursuit and understanding of disease. To achieve this objective, the HBGRD may benefit from ensuring that aggregate and generalised results arising from research conducted using its resources be added back into its database(s) in order to continue to build itself. A HBGRD should also encourage the dissemination of aggregate and general research results. Different means can be used to disseminate research results including publication though newsletters, websites containing research summaries, and lists of publications.

36. In exceptional circumstances, participants may also be provided with feedback of individual-level results. Where the HBGRD anticipates providing participants with individual-level results, it should pay special attention and consideration to the numerous complex factors that such a situation presents. Some examples of the factors that the HBGRD should give consideration to include ensuring validated results are provided to the participant, providing the participant with sufficient information on the implications of receiving such results, explaining to the participant that the results may also have implications for his/her family and relatives, and providing the participant with the option to not receive the individual-level results. The HBGRD should also consider whether it is appropriate for a trained professional to provide the feedback and/or to counsel the participant.

37. As many HBGRDs will be longitudinal in nature, situations may arise over the course of the HBGRD's operation, where re-contacting participants becomes important. For example, it may be that the HBGRD intends to carry out significantly different research than that originally contemplated, which was not covered during the informed consent procedure; or it may be that new information about disease diagnosis becomes available. Participants should be provided, at the time of consenting, information pertaining to re-contact. For example, they should be informed of the circumstance under which they will be re-contacted, whether re-contact is obligatory for participation in the HBGRD, and by whom they will be re-contacted.

38. HBGRDs should provide the right to withdraw to participants and inform them of this right at the time of consenting. Some possible options for a participant exercising their right of withdrawal:

a) No further contact with/participation by the participant, but permits the continued retention and use of the previously obtained specimens, samples and data, and if applicable, links to records from third parties.
b) No further contact with the participant, no further collection of specimens or data, and destruction or anonymisation of all specimens, samples and data.
c) Complete withdrawal including the destruction of samples and data.

39. In some situations, the right to withdraw may be circumscribed, and participants should be informed of this as well. For example, where samples have been anonymised and/or distributed, or results

are in the public domain or have been published, complete withdrawal may not be possible. Participants need to be informed about these situations and that complete withdrawal may not be possible. However, participants should also be reassured that confidentiality and protection of their specimens, samples and data will continue. Participants should also be provided with contact information in case they wish to withdraw at any time.

40. The HBGRD should also develop a policy in regards to participants who becomes legally incapacitated or dies. It is essential that the HBGRD provide information on their policy to the participant or the appropriate substitute decision-maker at the time of consenting. There are a variety of approaches for how these situations may be handled. For example, some HBGRDs may offer the option for participants to be withdrawn, by a next of kin or close friend (possibly someone named by the participant during the consent process), from a study after death or loss of capacity. Other HBGRDs make explicit to participants during the consent process that their data and samples will continue to be included in the HBGRD after they lose capacity or die. Some HBGRDs may wish to indicate that participants' data and samples will be irreversibly anonymised at the point at which their death becomes known to the HBGRD. HBGRDs should also consider whether they will reassess mental capacity during any re-contact of a participant and/or what the effect of a participant being found to lack capacity on re-contact will be (e.g. whether further data or samples might be collected thereafter, and whether the fact of their incapacity will be recorded and included in the research database).

41. At different points during the existence of the HBGRD, it will communicate with participants and the public. For example, the HBGDR will communicate with participants during the informed consent process, it may chose to provide updates of the research carried out using its resources; or it may provide information to participants if its nature or purpose were to be modified. When undertaking to communicate with the participants and with the public, various means of communications should be considered. Moreover, efforts should be made to employ environmentally-sound and cost-efficient means of communications. For example, this could include information via websites, TV, *etc*. However, decisions on the communications approaches to be employed should also take into account the diversity of the targeted audience. For example, consideration should be given to technology issues (*i.e.*, paper versions of the documents should be made available especially for those who are not familiar with technology), language issues (*e.g.*, do the documents need to be translated into a language of a large segment of the population, even if it is not an official language) and diverse challenges. For example, information may be more accessible for some portion of a population if made available in video format, and it may be more accessible for the visually impaired if converted into Braille script.

5. Contents of HBGRDs

42. HBGRDs should have a clearly articulated policy on the human biological materials and data that they will collect from each participant and store in the database. This policy should also cover the diverse types of data elements that will be collected, details about the quantity and quality of the specimens and/or data to be collected, and general information on whether there will be direct or indirect links to identifying information. For example, the HBGRD could provide information about the type of specimens that will be collected: blood, tissues, urine, hair, *etc*. specimens. The HBGRD could also indicate the quantity of each type of specimen that will be collected. For example, a HBGRD could indicate to participants that they will be asked to provide sixty 60ml (4 tablespoons) of blood through standard blood collection, that the participant's DNA and plasma will be extracted from the sample in order to evaluate the different components and elements in their blood, such as glucose levels and haemoglobin. The HBGRD may also explain the methods that will be used to obtain the specimens. The methods for obtaining the specimens should aim to balance the need to obtain the most useful specimen with the risk for the participant. The HBGRD may also consider putting in place insurance to cover participant's damages that may arise independent of professional negligence.

43. The HBGRD could also provide information about what data, information or samples will be derived from the specimen, if any. Moreover, the HBGRD should provide an explanation to participants of how the human biological materials will be employed. The HBGRD should also communicate to the participant the medical, personal and genetic information that will be collected.

44. HBGRDs may choose to not include certain data, to not perform certain tests and to not allow certain types of analyses. The HBGRD should have a clearly articulated policy about which specific types of data will not be collected and which specific types of tests will not be performed. For example, the HBGRD could indicate that it will not carry out tests for nor collect information about paternity, HIV/AIDS, or the use of illicit substances, where this is the case.

45. Different cultural and religious groups have diverse attitudes to biological material, and these can change over time. HBGRDs should take these into account, where they are known, and consider whether any steps should be taken to ensure such views are respected. Some groups regard certain types of biological material as having a special status, particularly where it is removed post mortem, and as deserving of special treatment *e.g.,* in terms of the method of its handling. Although this is most likely to be addressed during the consent process, there may be circumstances where this is not the case (*e.g.* in the case of existing collections).

46. HBGRDs can make an important contribution to the advancement of knowledge and understanding by participating in international endeavours and collaboration. One of the challenges facing international collaboration is the non-existence of internationally-accepted technological standards and norms. Working with other initiatives, HBGRDs could seek to develop and/or adopt widely-accepted standards that would be useful for international collaboration.

6. Protection of Human Biological Materials and Data

47. Human biological materials and data protection may be achieved via different approaches and mechanisms, and often through the combined use of various approaches. Some examples include, coding and encryption of human biological materials and data; anonymisation of samples and data; limiting access to the collection of human biological materials and data; implementation and maintenance of security measures to block unauthorised access; data enclaves, honest broker systems, *etc*.

48. In the event that human biological materials and data are collected by various partners, then each partner holding these could use their own code with none of them holding the totality of the codes. Honest broker systems involve independent third parties who are responsible for ensuring the separation of identifying information from other data. An honest broker may be, for example, a data protection authority. Data enclaves involve the use of secure or controlled access databases or websites. These allow the HBGRD or a third party to physically and electronically control and monitor the use of the HBGRD's database(s) by external users to ensure it complies with the terms of access and is conformant with the participant's consent.

49. Anonymisation is intended to prevent participant re-identification. As anonymised samples and data are not traceable back to the participant, it is not possible to undertake actions such as sample withdrawal, or the return of individual results, even at the participant's request. The use of anonymised data and samples does not allow for clinical monitoring, participant follow-up or the addition of new data from the participant. The deletion of the coding key(s) linking the data and samples to a given participant's identifiers provides additional confidentiality and privacy protection over coded data and samples, as it prevents participant re-identification through the use of the coding key(s).

50. It is important that human biological materials and data be collected in a manner that permits their use and sharing by researchers. Some efforts are underway to develop international standards to facilitate the linkage of datasets and the interoperability of systems so as to foster research and the sharing of data and materials. However, in many areas there is no international body responsible for establishing standards and/or there is no agreement among HBGRDs on commonly-accepted standards. For instance, for several types of data there is no international agreement on preferred format.

7. Access

51. The operators of the HBGRD should ensure that the access and uses of human biological material and data are in line with those described in the research protocols, consistent with the participant's informed consent and respect the privacy of the participant and confidentiality of the human biological materials and data. The HBGRD may also provide information about whether human biological materials and data will be made available for research pursuing commercial purposes or research carried out beyond national borders.

52. During the consent process, HBGRDs should provide information to participants on whether human biological materials or data will be made available for non-research purposes. For example, human biological materials or data may be made available for non-research purposes such as proficiency testing or for public health emergencies. Similarly, the participant should be informed during the informed consent process whether the HBGRD is required by law to make available human biological materials or data to third parties such as insurers, employers, law enforcement agencies or other civil-law agencies, for non-research purposes.

53. In general, the participants should not be directly contacted by researchers who have accessed human biological materials and data from the HBGRD. In exceptional circumstances, contact between researchers and participants may be appropriate. Where a HBGRD contemplates that it will allow contact between researchers and participants, it should develop a policy that sets out the exceptional circumstances under which such contact will be permitted, the justification for such a request, the manner in which the contact will be carried out and should inform the participant of this policy. For example, the HBGRD's policy could set out that access to participants will only be allowed with the written approval from the participant and from a research ethics committee.

54. In establishing criteria for prioritising access applications, the HBGRD can consider, for example, its objectives, the feasibility of the proposed study, the appropriateness of the study design, and an assessment of the qualifications of the researcher to carry out the proposed research. The HBGRD may also want to ensure that the proposed uses are scientifically and ethically appropriate and consistent with applicable policies, frameworks and legislation. A HBGRD should have their access policies readily available to participants and third parties to ensure complete transparency of processes.

55. Depending on the nature of the resource, the data/ sample provider and the end user, access agreements (including data access and material transfer agreements) may address some or all of the following:

- What is to be provided (specification of data and materials, format and timing of release);
- What the data and materials provided can be used for (this is often limited to a specific project), and what they can't be used for (this may be everything other than the specified project, or something more specific (*e.g.* data linkage);
- The credentials of the end user;

- Fees (or royalties) payable;
- Arrangements concerning intellectual property rights (*e.g.* whether or not IP rights are asserted by the provider over existing or future IP, or any licences sought by them to future IPR);
- Requirement to return research findings to the resource owner to enrich the resource;
- Requirement to publish research findings and/or to disseminate them more generally, and to acknowledge the resource in publications;
- Requirement to act in accordance with participants' consent, and any procedures in the event of withdrawal of consent;
- Requirement to act in accordance with relevant legal and regulatory requirements, and obtain ethical approval (where applicable);
- Requirement to preserve confidentiality, and/or maintain anonymisation (and not attempt to re-identify or re-contact participants);
- Limits on (prohibition of or additional safeguards required for) transfer of data or materials to third parties, including cross-border;
- Limits on (prohibition of) certain uses of materials or data;
- Disclaimers of responsibility for data/ sample quality;
- Return or disposal of residual samples at the end of a project;
- Termination (*e.g.* for default);

56. The transfer of human biological materials and data outside the geographical jurisdiction where they were collected raises numerous complex issues. While most jurisdictions will have some applicable legislation, regulation and policy, there may still be lacunae and more specific legalisation, regulation and policy may be required. The HBGRD and researchers requesting access should develop a material transfer agreement or other agreements.

57. HBGRDs may adopt stratified policies in regards to access to its resources or to the payment and amount of fees. These policies may be based on a number of criteria, including for instance the background or affiliation of the researcher.

58. Where human biological materials are physically released to third parties by the HBGRD, consideration should be given to the implications for the custodianship of any data derived from the analysis of such material that relates directly to participants (e.g. genotype data derived from DNA), particularly where such data can be linked to significant amounts of phenotypic data about the same participant. Such issues should be addressed in the material transfer agreement which governs the release of human biological materials and data from the HBGRD to the researchers. In order to protect the privacy of participants and the confidentiality of their biological materials and data, issues pertaining to any data derived from such materials should be subject to the HBGRD's governance mechanisms.

59. The HBGRD should provide the quantity of materials and data consistent with that required for the research to be performed. The HBGRD should request information from the researcher on whether the quantities provided were sufficient and that there was no excess materials or data.

8. Qualification, Education and Training

60. Professionals employed by a HBGRD should possess the qualifications, education, training and experience appropriate for carrying out their professional activities. Personnel should be competent to assure the quality of the human biological materials and data collected, stored and made accessible, as well as ensure the rational, legal and ethical usage of the HBGRDs' resources. Management should ensure that all personnel understand the nature of their responsibilities, whatever their function in the HBGRD. Depending on the responsibilities of a staff member, training be can cover developments in regards to areas such as human genetics, ethics, informatics, law, management, as well as methods for collecting and storing human biological materials and data.

61. Since protecting the privacy of participants and the confidentiality of human biological materials and data is important, personnel should also be trained in regards to their obligations of confidentiality, particularly in regards to requests for access.

62. Some of the HBGRD's personnel may have to contact participants or communicate with the public. It may be useful for such personnel to be provided with specific training in such areas. This training could cover, for example, ways in which to address particularly sensitive issues for the community with whom they will need to communicate.

63. Appropriately educated and trained management and personnel is important for the effective and efficient operation and management of a HBGRD. The education programme of a HBGRD could draw on the relevant education programmes of other institutions. As part of an educational programme, HBGRD staff may participate in the development of other HBGRDs and may contribute in the development of international standards. It may also be desirable that the scientific/research community consider establishing an education program/system for educating and training personnel involved in HBGRDs.

9. Custodianship, Benefit-Sharing and Intellectual Property

64. The HBGRD should have a clear policy on who will retain rights over human biological materials and data, and on the nature of these rights, which may differ from jurisdiction to jurisdiction. Where the HBGRD intends to retain certain rights, it should inform the participant. The participant should be provided, in an understandable manner, with information on the nature of the rights that the HBGRD will retain and its consequences. In situations where the participant retains any rights, these should also be explained in an understandable manner.

65. Over time, benefits will arise from the establishment of HBGRDs. An HBGRD's benefit-sharing policy may indicate any benefits for the general public and for the specific participants. Benefits may include, but are not limited to, contributions to the advancement of science, the development of new diagnostic and therapeutic tools or products, or capacity-building, whether in OECD member countries or non-member economies. In recognition that the sharing of knowledge is one of the most important benefits to be derived from HBGRDs, they should endeavour to foster the exchange of information, technology and research. Information, technology and research may be carried through various means including through technology transfer, material transfer, licensing, joint development activities, *etc*. The Recommendation of the Council on the Licensing of Genetic Inventions and the guidelines it incorporates (2006) provide guidance so as to ensure that licensing and transferring agreements as well as joint development activities are carried out in a balanced manner and are based on economically rational practices that help eliminate

high transaction costs and that serve the interests of society. Benefits resulting from the HBGRD activities and their applications should be shared as much as possible with donors, communities and society as a whole.

66. Where the HBGRD has been developed with input from researchers from resource-poor settings, it may also be appropriate for the users of the resources or the initiators of the HBGRD to identify ways in which the contributors can be supported (e.g. through the exchange of knowledge or know-how to develop research capacity in such settings).

67. HBGRDs should also develop a clear policy on any intellectual property rights that may arise, either directly or indirectly, from the HBGRD. For example, the policy may set out to whom these rights accrue, and who will ensure their protection or enforcement, if necessary. Similarly, there may be IP rights that arise pursuant to the research that is carried out using the human biological materials and data obtained from the HBGRD. The policy should clearly set out the policy with regards to such rights. For example, the policy could explain that any IP rights arising from the research belong to the researchers or their employers.

68. The Guidelines set out that researchers should acknowledge in their publications and presentations, the HBGRD whose resources they have used or relied on. It would be useful for a HBGRD to develop a policy providing specific guidance on the manner in which such an acknowledgement should be indicated.

10. Discontinuation of the HBGRD and Disposal of Materials and Data

69. Some HBGRDs may have a determined end date and should plan for how the human biological materials, data and information will be handled at that point in time. In addition, a HBGRD should also develop a plan for unexpected discontinuation, such as if its funding were to terminate, or if it no longer serves a scientific valuable purpose. This policy should include detailed plans for the appropriate disposition or destruction of the human biological materials, data and information.

70. Where scientific valuable HBGRDs may be discontinued for financial reasons, its operators may consider the transfer of its resources to another entity or HBGRD. In the case that a transfer is being considered, prior to the transfer, the operators should ensure that the recipient has in place equivalent policies, governance structure, equipment and systems, and staff.

71. HBGRDs should develop plans for the appropriate transfer, disposition and destruction of human biological materials and data where it is no longer scientifically or financially feasible. The HBGRD should have policies and procedures in place for ensuring appropriate disposal of potentially bio-hazardous materials.

72. At the point of its discontinuation, a HBGRD should ensure the destruction of specimens and samples under its control, which may be more straight-forward than ensuring the destruction of specimens, samples and data that have been provided to third parties. While the HBGRD should make every effort possible to retrieve and destroy all such specimens and samples, there may be circumstances where this is not feasible (*e.g.,* if pooled samples are prepared or cells lines have been developed and disseminated anonymously).

73. The destruction of all data may also be quite difficult given that "back-up" files may cover a lengthy period (for example, 20 years). The HBGRD should destroy all information and data that it holds in accordance with the protocol, the participant's informed consent, as well as legislation and regulation, including that applicable to the protection of the participant's privacy. While HBGRDs should make every effort possible to retrieve and destroy all of the data, there may be circumstances where this is not feasible.

74. Different cultural and religious groups may have diverse attitudes to biological material, which can change over time. Some groups may regard certain types of biological material as having a special status and as deserving of special treatment *e.g.* in terms of the method of its disposal. Although this is most likely to be addressed during the consent process, it will also be an important consideration at the point of disposal of the human biological materials. HBGRDs should take these into account, where they are known, and consider how to respect those views. For example, some cultural or religious groups may follow traditional practices in the disposal or destruction of human biological materials.

GLOSSARY

The following definitions are provided only for information purposes. Some of these definitions are drawn from other documents and do not represent an effort by the OECD to agree on interpretations of these definitions or develop new ones.

Assent: This term is used in the context of a child participant in research. Even though a child may not be considered legally competent to consent to participate in research, the child may be considered competent to give his/her assent, that is – their opinion on whether they wish to participate in the research.

Associated Information: personal, clinical, biochemical and phenotypic information about the participant.

Anonymised: Anonymised data and samples are initially single or double coded but where the link between the subjects' identifiers and the unique code(s) is subsequently deleted. Once the link has been deleted it is no longer possible to trace the data and samples back to individual subjects through the coding key(s). Anonymisation is intended to prevent subject re-identification. As anonymised samples and associated data are not traceable back to the subject, it is not possible to undertake actions such as sample withdrawal, or the return of individual results, even at the subject's request. The use of anonymised data and samples does not allow for clinical monitoring, subject follow-up or the addition of new data from the subject. The deletion of the coding key(s) linking the data and samples to a given subject's identifiers provides additional confidentiality and privacy protection over coded data and samples, as it prevents subject re-identification through the use of the coding key(s).

Coded: where data and samples are labelled with at least one specific code and do not carry any personal identifiers.

End-User: a health care practitioner, scientist, or laboratory personnel who performs an appropriate procedure, test or archival function for the specimen.

Governance: the processes and structures that an entity uses to set its objectives/goals, appoint the management whose responsibility it is to achieve these goals and to oversee management in its pursuit of these goals. Governance mechanisms are also needed to put in place internal controls and risk management systems. Management is accountable to the governance bodies that in turn are usually/should be accountable to those who have appointed them.

Human Biological Material: includes specimens, samples and aliquots of the original material, and their fractionated components.

Identifying information: information that may lead to the identification of the participant from whom the human biological material, data and associated information are obtained.

Informed consent: A process by which information concerning the intended research is provided to the participant or participant's substitute decision-maker with an opportunity for them to ask questions, after which specific approval is documented.

Management: comprises directing and controlling a group of one or more people for the purpose of coordinating and harmonizing that group towards accomplishing a goal. Management often encompasses the deployment and manipulation of human resources, financial resources, technological resources, and natural resources. Management is responsible for achieving the objectives/goals set for the organisation and is given considerable leeway to undertake this task. While this may be operationally efficient, there is a

possibility that management might act only in their own interests, hence the need for governance mechanisms.

Material Transfer Agreement: generally signed between a provider and a recipient, is used to document the transfer of materials, with or without information, either to an entity (*i.e.,* the recipient) and/or away from an entity (*i.e.*, the provider) subject to a number of terms and conditions.

Operators: the researchers, governmental entities and/or organisations involved in setting up and operating the HBGRD, and including the initiators of the HBGRD.

Oversight: is based on the notion that there is usually a difference between setting policy and objectives for an entity and overseeing or monitoring how these are being executed or put into operation.

Participant: Individual from whom biological materials, data and information are obtained.

Private entity: may cover for-profit entities but may also cover legal entities not publicly held or traded.

Private-Public Partnership (PPP): is a cooperative venture between the public and private sectors, built on the expertise of each partner and involves the allocation of resources, risks and rewards.

Processing: includes procurement, collection, labelling, registration, storage, tracking, retrieval, transfer, use and destruction

Research Ethics Committee (REC): is a local authority that evaluates research projects involving human beings, including genetic research. The primary function of a REC is to protect the welfare and rights of human participants in research. Depending on the jurisdiction, these may also be referred to as Ethics Review Board (ERB) or Institutional Review Board (IRB).

Sample: a single unit containing material derived from one specimen.

Specimen: a specific tissue, blood sample, urine sample, *etc*. obtained from a single participant at a specific time.