Introduction
H3Africa is an international collaboration of scientists working to build genomic research capacity in Africa. The goal of H3Africa is to support cutting edge research to advance understanding of the genetic and environmental determinants of common diseases in Africa and to use this knowledge to improve the health of African populations. It is distinctly African in terms of leadership, focus and development, targeting diseases pertinent to African populations. An important aim is to train the next generation of African genomic researchers. A key component of H3Africa research is the global sharing of biospecimens and data to promote their utility and to speed up discovery of new knowledge that could impact disease prevention and management. H3Africa research raises a number of ethical considerations, including those related to informed consent and data and sample sharing. The purpose of the Ethics Consultation meeting is to discuss policies governing H3Africa research, and to provide an opportunity for Research Ethics Committees (or IRBs) to raise and discuss ethical issues associated with H3Africa projects. One member from each research ethics committee reviewing an H3Africa research proposal has been invited to attend this meeting. The purpose of this briefing document is to give attendees an overview of H3Africa research and its policies.

The H3Africa Consortium
Currently, the H3Africa Consortium supports 21 projects, including 15 scientific research projects, a bioinformatics network, 4 pilot biorepository projects, one ethics research project and plans to fund another 3-5 ethics research projects. The scientific research projects focus on a host of diseases pertinent to African patients, including: infectious diseases such as Rheumatic Heart Disease, Trypanosomiasis, TB and HIV; chronic diseases such as diabetes, kidney disease and obesity; mental health conditions such as schizophrenia; and cervical cancer. H3Africa research is conducted in 27 countries in Africa. The principal investigators (PIs) of the current 21 H3Africa projects have their primary affiliation at an African institution. Together, they form the H3Africa Steering Committee. Funding for H3Africa research is provided by the Wellcome Trust in the United Kingdom and the National Institutes of Health (NIH) in the United States.

H3Africa Research
All the H3Africa research projects use clinical information in conjunction with genomic methods to investigate disease, but there is some variation in the exact methods used by each project. Some projects may use genotyping platforms and therefore produce only genotype data, whilst others use exome sequencing or other methods available in the field. What differs between these methods is the amount of data that is generated. Virtually all the H3Africa projects generate human genomic data, although there are also projects that generate other types of data such as genomic data on viruses, parasites and bacteria and data on the ethical implications of genomic studies. All projects that generate human genomic data collect a human genetic sample (usually from blood or saliva) but some projects also collect other samples such as nasopharyngeal swabs or urine samples.

1 Document prepared by the H3Africa Working Group on Ethics in May 2014.
Projects also collect phenotype information relating to the disease. Exactly what phenotype information is collected differs for each project, although efforts for (some degree of) harmonisation are under way. Since ethical issues often arise when performing genomic studies, each H3Africa project has nominated at least one person to be part of the H3Africa Working Group on Ethics. This Working Group is hosting the Ethics Consultation meeting. The Working Group seeks to identify and discuss ethical challenges in H3Africa research, to develop guidance for researchers on how to address ethical issues, and also to provide input on the development of H3Africa policies.

**Ethical Considerations in H3Africa Research**

Genomic research in Africa raises a host of ethical issues, some of which are similar to issues raised elsewhere, and some of which are particular to the African context. The most important ethical questions that have been raised to date concern community engagement, consent, collection of specimens, strategies for promoting African research capacity and regulation of sample and data sharing. In addition, the H3Africa Ethics Working Group is currently examining how community engagement could best support genomic research in Africa. A free short course offering an introduction to these issues for ethics committee members is available through the Global Health Trials website (http://globalhealthtrials.tghn.org/elearning/other-resources/, number 10 on the list). During the meeting, we will not have time to extensively discuss all of these issues: rather, we will focus primarily on the ethical concerns that are most pertinent to H3Africa research. These are: broad consent, and issues relating to sample and data sharing. We will liaise with meeting attendees prior to the meeting to collect their views on particular ethical issues raised by H3Africa research. During the meeting, we will encourage attendees to raise and discuss specific ethical issues that they identified in their review of H3Africa research proposals. Also, we hope to draw on the collective experience of meeting attendees to advise the Ethics Working Group on issues they feel have not been adequately addressed in the guidelines produced to date.

**Community Engagement**

A first important question in H3Africa research concerns how to optimally engage with communities about genomic research. Namely, there is currently very little information about what the general public and specific communities in Africa think about genomic research and sample and data sharing. Also, there is a need to develop community engagement methods that can help address some of the challenges in obtaining informed consent to insure that the process respects participants and their communities, and that complies with the laws pertaining to research in the country where the research is being conducted. Not only would such initiatives enhance and support the successful implementation of H3Africa projects, but they would also generate momentum for empowering Africans to make decisions about other types of research where informed consent is being sought. To examine what means and methods are best suited to achieve these objectives, the H3Africa Working Group on Ethics is currently conducting a systematic review of the literature, as well as interviews with the various H3Africa PIs and the people in the projects tasked with community engagement. The lessons learnt from this project will be shared with the H3Africa researchers and the broader public to inform community engagement strategies across the consortium. A workshop is also planned later in 2014 to provide an opportunity for projects to share best practices.
**Broad Consent**

A key challenge arising in genomic research in Africa is implementing the process of informed consent. Particular challenges for genomic research that have been described in the literature relate to: 1) difficulties of translating complex scientific concepts into vernacular, and explaining these to participants in ways they can understand and 2) appropriately explaining risks in genomic research. While there may be little direct risk of harm at the time of sample collection (minor risks associated with drawing blood for instance), the possibility of downstream harm related to breach of confidentiality through re-identification and group stigma as well as cultural sensitivities around the use of blood samples do exist. In addition, consent for genomic research is complicated by challenges associated with medical research in Africa more widely, relating to for examples poor healthcare infrastructure, therapeutic misconception, trust in clinicians and low average levels of education and income. To respond to some of these issues, the H3Africa Working Group on Ethics has developed guidelines for Informed Consent ([http://h3africa.org/images/FinalPoliciesDocuments/H3A%20WG%20Guidelines%20Informed%20Consent_FINAL_01082013.pdf](http://h3africa.org/images/FinalPoliciesDocuments/H3A%20WG%20Guidelines%20Informed%20Consent_FINAL_01082013.pdf)) to help researchers develop consent templates for H3Africa research.

An increasingly common challenge also raised by H3Africa research relates to the issue of broad consent. Namely, for samples to be shared widely for secondary use (see relevant section below), samples and data should ideally be collected with ‘open’ or ‘broad consent’, which refers to consent for the re-use of samples and data for use in projects unrelated to the type of project for which they were collected, now and in the future, with appropriate ethics approval of protocols and governance mechanisms in place.

**Data and Sample Storage**

In line with international standards, there is no specified timeframe for storage of genomic and phenotype data. These data will be used for as long as they are of value. With regard to the storage of samples, the H3Africa Consortium does not prescribe a limit to sample sharing but leaves this up to the investigators to determine in line with established practices at their institutions and the policies of their granting agencies. It is recognised that different jurisdictions and institutions may have specific guidance for limitations to data and sample storage and H3Africa will follow these where they exist (see also the section on the H3Africa Data and Biospecimen Access Committee below).

**Data Sharing**

Across the world, it is now standard practice for genomic data to be shared for secondary use by other researchers, and H3Africa research is aligned with this practice. In fact, in most cases, the sharing of genomic and associated phenotype data is a requirement for funding. Genomic data from many African research participants is already shared through controlled-access databases. For instance, the MalariaGEN project shares data from participants from The Gambia, Malawi and Ghana ([www.malariagen.net](http://www.malariagen.net)) and 1000Genomes shares data from participants in Sierra Leone, Kenya, The Gambia and Nigeria ([www.1000genomes.org](http://www.1000genomes.org)). For H3Africa research, the current policy that is proposed is that researchers have exclusive use of their data for 9 months after they complete quality control. After this period, data will be submitted to the European Genotype Archive (EGA), which is a facility that holds and distributes genomic data for research projects. The data will only be distributed to secondary researchers after 9 months. Researchers wishing to use the data will need
to apply to the H3Africa Data and Biospecimen Access Committee (see below). After the 9 month period, researchers will have 12 months to publish their analysis of the data. During this period, the data are under a so-called ‘publication embargo’, which means that even if other researchers can use the data, they will not be allowed to publish on the data for the period of the embargo. In total, H3Africa researchers will have 21 months to analyse and publish their data before researchers elsewhere can publish. This should give researchers in Africa a fair opportunity to publish first. The lengthy timeframe will enable African researchers to overcome challenges in infrastructure and capacity that could compromise their ability to analyse genomic data, and to allow them sufficient time to publish their results.

**Sample Sharing**

Biobanks or biorepositories are collections of human samples and data, usually collected on an ongoing basis for use in future projects. Biorepositories are publicly accessible and are organised in a transparent and auditable way. The benefits of biorepositories include that they a) reduce the need for new sample collection, b) increase utility of samples and data, c) reduce cost of research, d) increase possibilities for validation and d) hopefully accelerate research. Biorepositories are fairly new on the African continent and it is not yet clear exactly what ethical issues they would raise in Africa.

In the context of H3Africa research, the proposal is to support 2 to 4 biorepositories in Africa. H3Africa researchers across the continent will submit their samples to the H3Africa biorepository of their choice. Eventually, the ambition is that all H3Africa funded researchers would submit their samples to one of the H3Africa biorepositories, although this is currently only mandatory for researchers funded by the NIH. Pilot H3Africa biorepositories are currently being developed in Nigeria, Uganda and South Africa. H3Africa researchers who are not based in one of these three countries, will have to send their samples to the H3Africa biorepositories in one of these three countries. Once the samples and data are stored in one of the H3Africa biorepositories, they will be distributed for secondary use to scientists outside of the original projects after approval by the H3Africa Data and Biospecimen Access Committee.

The proposal that H3Africa samples will be sent to one of the H3Africa biorepositories for sharing raises a number of ethical issues. Arguably the most pertinent of these is the requirement for ‘broad consent’. To be most useful, it is important that samples and data can be used for as many projects as possible. This means that it is preferable for consent not to be too specific. In practice, this translates to a requirement for ‘broad consent’, which is consent to use samples and data for unspecified purposes, now and in the future. Another important challenge raised by the sample sharing requirements in H3Africa is that in many cases, samples will have to be exported to and distributed from one of the countries where the biorepository is based. This raises issues relating to permissions required for sample export, as well as questions about the ongoing involvement of the ethics committee that originally approved sample collection. Lastly, the requirement for sample sharing raises questions about how H3Africa research will benefit African researchers and patients. To address these challenges, the H3Africa Consortium has developed a Biospecimen Release Policy. The most pertinent points in this policy are that:

1. The H3Africa biorepositories are the custodians of samples and data; original ‘ownership’ remains with the institutions or researchers who collected the samples;
2. Samples will only be distributed for secondary use for research that is aligned with the consent and ethics approval that accompanied sample collection, and with national legislation in the country where samples were collected;

3. To ensure that H3Africa research will maximise capacity building in Africa, in the first three years after samples become available for distribution, they will only be available a) to researchers in Africa or, b) to researchers outside of Africa who collaborate with an African researcher and who aim to build African research capacity;

4. Decisions about sample access will be made by the H3Africa Data and Biospecimens Release Committee (see below). The Committee’s decisions will follow the conditions placed on the samples by the Research Ethics Committees that approved the original collection of samples. These committees will not generally be involved in sample access decision.

**H3Africa Data and Biospecimen Access Committee**

Access to H3Africa samples and data will be controlled by the yet-to-be established H3Africa Data and Biospecimen Access Committee (DBAC). The proposal is that this committee will comprise 8 members, including genomic scientists, a bioinformatics expert, a biobanking expert, a bioethicist or person with experience in ethical issues relating research with human participants, and a lay person (for instance a study nurse or a representative of a patient advocacy group). The proposal is that all committee members need to either be based in Africa, or have worked in Africa in the past. Long term support for the DBAC is currently under discussion.