Opening Statement (in favor of reporting incidental findings):

We find ourselves in an age of overwhelming information. This is a fact; and it is our task to figure out what to do about it. That is the central theme of this report, how we deal with medical information in the most ethical way possible, specifically in regard to incidental findings in genetic tests. I believe the most ethical approach is to be as forthcoming about relevant information as possible. After all, we seek out information so that we can use it. And I have a few reasons for this stance. I believe that it leads to better outcomes; I believe that benefits to the patients that come from advanced decision making are in general worth the stress of finding out earlier; and I believe that the new era of personalized medicine will necessitate and thrive on early reporting of relevant information for a preventive approach rather than mere palliative care.

First, the result of a genetic test is not the source of disease. Not getting tested does not change one's chance of developing a disease any more than sticking one's head in the sand will make it go away. Information only affects our understanding of and approach to reality. A child predisposed to disease will likely go on to develop disease whether or not they have been tested. The information we gain through genetic tests allows us to more closely align our perception of reality with reality itself. We can know about the predisposition and act accordingly, saving lives and healthcare costs. The conditions in the ACMG report have been selected by prominent authorities in the field of genetic screening and a panel of outside experts such that the benefit for informing the patient early is high.

As you all know, in general, the prognosis of cancer treatment depends on the stage at which the cancer is discovered. I am using the example of cancer because most of the genes listed in the ACMG report relate to various cancers, specifically those for which the ethical case for disclosure is clear. As stated in the Discussion section, "The conditions and variant thresholds we selected for reporting incidental findings have therefore been set to try to maximize the benefits (increasing the likelihood of true positive results) and minimize the harms (decreasing the likelihood of false positive results)." Discovering a cancer in its early stages, in general, not only greatly improves prognosis of survival, but also greatly improves the quality of life of the patient as they may avoid more strenuous treatment reserved for more severe cases. Some tumors may be removed before they advance to malignancy, saving both lives and healthcare expenses. The debate surrounding the appropriate age for beginning mammography screening in recent years has revolved around balancing false positives and true positives with cost of care. If we have the tools to take a more targeted approach to screening women who are at a greater risk for developing breast cancer, then why should we not use it? I believe it would be immoral to allow a patient to progress towards disease without doing everything within reason to prevent suffering. The conditions recommended for disclosure offer the

Second, we must realize that suffering takes many forms. Patients and their loved ones suffer from death and the trauma of undergoing painful medical procedures to improve their prognosis. Early reporting of incidental findings mitigates this suffering by allowing patients to better their chances by choosing to take action before the later stage of disease

in which patients and their doctors typically find out. It gives patients more power and autonomy to make informed and potentially life-saving decisions for themselves.

Patients also suffer from the stress of having to confront the disease and make difficult medical decisions. However, for conditions with strong genetic predictors such as those recommended by the ACMG, the patient will likely have to confront the disease at some point in their life regardless of whether they get tested or not. To take an example, specific mutations in APC are known to confer a near certainty that colon cancer will develop by early adulthood. I would like to ask everyone in the room, given that it's possible that any of us has one of these disease-conferring genetic mutations, would you rather confront the disease in advance or after it's already developed and is actively threatening your life?

It is important to remember that informed consent is the golden standard for medical and scientific practice. Doctors are required to provide informed consent to patients so that they can decide whether they want to get tested in the first place. Getting a test that will reveal potential BRCA mutations and asking a doctor to simply not tell the patient about it puts the doctor in an extremely difficult moral and legal position that needs to be recognized. Information cannot be unseen or unknown by anyone, both patient and doctor. And, in all cases, doctors should be urged to use their best professional judgment. The recommendations set up by the ACMG are just that: recommendations, and I do not believe that any list of best practices should override a doctor's best professional judgment but rather serve to guide it. In light of this, the ACMG states that "The Working Group has designed these recommendations for the situation in which a clinician orders exome or genome sequencing for a specific clinical indication. In this circumstance, a laboratory report will be returned to that clinician, who will ideally be in a position to integrate such findings with the medical and family history and the physical examination, taking into account the psychological state of the patient and the patient's family." Professional and legal standards will remain the same, and doctors will be able to make exceptions if their best professional judgment deems it appropriate.

Finally, the benefits that come from personalized medicine depend on the knowledge of such information. Soon it will be cheaper for insurance companies to pay to have each of their client's genomes sequenced because they will expect to save more money through applying prophylactic instead of curative care. This will also lead to vastly improved outcomes and cheaper cost of care, as we will target screening and interventions to those who need it most, catching diseases at earlier stages or preventing them from occurring, and not wasting our health care money on screening everyone when only a few are expected to develop diseases with a strong genetic basis. The direction of the field is clear: towards more personalized medicine for better outcomes. The exact set of best practices for which conditions to report will evolve as the field does, which is why the ACMG Working Group "recommends that the ACMG, together with content experts and other professional organizations, refine and update this list at least annually". The current list is preliminary, and is an excellent first start towards an era of personalized medicine with better outcomes.