The formalized by the signing of a

The Human Genome ProjectThe Human Genome Project is a worldwide research effort with the goal ofanalyzing the structure of human DNA and determining the location of theestimated 100, 000 human genes.

The DNA of a set of model organisms will bestudied to provide the information necessary for understanding the functioningof the human genome. The information gathered by the human genome project isexpected to be the source book for biomedical science in the twenty-firstcentury and will be of great value to the field of medicine. The project willhelp us to understand and eventually treat more than 4, 000 genetic diseases thataffect mankind. The scientific products of the human genome project will includea resource of genomic maps and DNA sequence information that will providedetailed information about the structure, organization, and characteristics ofhuman DNA, information that constitutes the basic set of inherited” instructions” for the development and functioning of a human being. The Human Genome Project began in the mid 1980’s and was widely examinedwithin the scientific community and public press through the last half of thatdecade. In the United States, the Department of Energy (DOE) initially, and theNational Institutes of Health (NIH) soon after, were the main research agencieswithin the US government responsible for developing and planning the project.

By1988, the two agencies were working together, an association that was formalizedby the signing of a Memorandum of Understanding to “ coordinate research andtechnical activities related to the human genome”. The National Center for HumanGenome Research (NCHGR) was established in 1989 to head the human genome projectfor the NIH. NCHGR is one of twenty-four

institutes, centers, or divisions thatmake up the NIH, the federal government’s main agency for the support ofbiomedical research. At least sixteen countries have established Human GenomeProjects.

The Office of Technology Assessment (OTA) and the National ResearchCouncil (NRC) prepared a report describing the plans for the US human genomeproject and is updated as further advances in the underlying technology occur. To achieve the scientific goals, which together encompass the humangenome project, a number of administrative measures have been put in place. Inaddition, a newsletter, an electronic bulletin board, a comprehensiveadministrative data base, and other communications tools are being set up tofacilitate communication and tracking of progress. The overall budget needs forthe effort are expected to be about $200 million per year for approximately 15years. Lasers are used in the detection of DNA in many aspects of the project; a very important use is in sorting chromosomes by flow cytometry. Lasers arealso used in confocal fluorescence laser microscopy to excite fluorescentlytagged molecules in genome mapping, in addition to other mapping uses. Indiagnostic applications, lasers are used with fluorescent probes attached to DNAto light up chromosomes and to create patterns on DNA chips.

From the beginning of the human genome project it was clearly recognizedthat acquisition and use of such genetic knowledge would have momentousinvolvements for both individuals and society and would pose a number ofconsequential choices for public and professional deliberation. As Thomas Lee writes, “ the effort underway is unlike anything everbefore attempted, if successful, it could lead to our ultimate control of

humandisease, aging, and death". Whatever its justification, the human genome project has alreadyinspired society with the hope of " better" babies, and one way to deploypragmatism in the analysis of genetic engineering is to look at this promise of" better" babies in its social context: parenthood. Parents hope for healthychildren and, if they could afford it, make choices (such as choosing parentalcare) to help " engineer" healthier babies. Genetic engineering seems in thisrespect to offer the brightest hope for parents.

Through germ-line therapy, disastrous, but genetically discrete diseases, such as Huntington's and cysticfibrosis could be removed from the DNA of the egg or zygote. Clearly parentswould follow the model in choosing to avoid a short, painful life for theirchildren. Another more reasonable fear is that we have not the slightest idea whatwe are doing and ought to avoid making hasty choices. Hybrid varieties are oftenimpossible to protect from the complexities and dangers of nature. In the humancondition, this is the possibility of making an error and creating a geneticallyadvanced baby who cannot cope with an imperfect world. While much of societyreports a willingness to modify DNA for the purpose of heightening intelligence, education about genetics and medicine is still in its beginning. Jonathan Glover argues for a " pragmatism of risks and benefits", writingthat, " The debate on human genetic engineering should become like the on nuclearpower: one in which large possible benefits have to be weighed against bigproblems and great disasters".

One significant element is the assertion that genetic engineering isradically different from any other kind of human medicine, and

constitutesinterference in a restricted area, trying to “ play God”. As Robert Wright notes, “ Biologists and ethicists have by now expendedthousands of words warning about slippery slopes, reflecting on Nazi Germany, and warning that a government quest for a super race could begin anew” ifgenetic engineering ventures “ too far”. In my opinion, I believe that, if and only if, a deadly disease isdetected, then the scientists and/or doctors should tap into the DNA of a zygoteor egg for testing and absolute knowledge of the steps of the procedure must bepresent.

I do not believe that there should be a genetically advanced child inthe world, everyone is created equal and nobody should have their destinychanged for any reason. Science