

Sciences Po Law Clinic  
27, rue Saint Guillaume  
75005, Paris

Mr. Jean François DELFRAISSY  
President  
Comité Consultatif National d’Ethique  
35, rue Saint-Dominique  
75007, Paris

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Object : Query about the status of ageing

Mr. President,

We are writing to you on behalf of ThinkH+, a think-tank born out of the Sciences Po Law School Clinic’s program on Corporate Social Responsibility, designed to be a forum for the public to explore the realities of augmented humanity and, more broadly, of transhumanism, in order to responsibly design ethical environments at a regulatory level.

We would like to submit to the attention of the CCNE a question dealing with the pressing legal, ethical, socio-economic, political and health-related issues raised by recent anti-ageing medical improvements. In light of the unprecedented corporate activity in the field of research being done to stop the signs of ageing on the human body and the very process of ageing altogether, it has become necessary to ask: **What is the status of ageing? Specifically, should ageing be considered a disease ?**

The search for means to prolong life has been linked to humanity since its very beginning<sup>1</sup>, academic researchers have been joined by large corporations in a race to profit from people’s tenuous desire to live longer and look younger. For instance, IT corporations such as Alphabet’s daughter company, Calico<sup>2</sup>, have announced pursuing ambitious anti-ageing research programs<sup>3</sup>. Today, thus, curing aging is supported internationally, from Silicon Valley to the East Coast’s Harvard educated researchers<sup>4</sup>, the Trans-Atlantic trend seems to

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<sup>1</sup> Caplan, Arthur L. 2005. “Death As An Unnatural Process”. Online. *Embo Reports* 6: S72-S75. doi:10.1038/sj.embor.7400435.

<sup>2</sup> Dougherty, Conor. 2017. “Calico, Google’S Anti-Aging Company, Announces New Research Facility”. Online. *The New York Times*. New York. [https://bits.blogs.nytimes.com/2014/09/03/googles-anti-aging-company-announces-new-research-facility/?\\_r=0](https://bits.blogs.nytimes.com/2014/09/03/googles-anti-aging-company-announces-new-research-facility/?_r=0). (accessed February 14, 2017).

<sup>3</sup> Researchers at the Bermuda Institute of Ocean Sciences (Saint Georges, Bermuda) and MDI Biological Laboratory (USA) have therefore investigated the characteristics of the regenerating sea urchin tissue. Their study is published in the *Aging Cell* journal and shows that the ageing process is not always inevitable. Available at: <http://www.topsante.com/senior/beaute-anti-age/soins-anti-age/un-nouveau-secret-anti-age-pique-aux-oursins-611613> (accessed February 14, 2017).

<sup>4</sup> Dr. Ana Gomez of the Department of Genetics at Harvard Medical School has achieved an admirable feat: partially reversing the ageing mechanism. While old age is considered to be an immutable process, the US research team demonstrated that some aspects could be reversed. Available at: <http://www.topsante.com/senior/beaute-anti-age/soins-anti-age/un-traitement-anti-age-teste-avec-succes-51989> (accessed February 14, 2017).

converge towards the idea that ageing represents a disease. Driven by these (commercial) interests, there have already been attempts to have the FDA declare ageing as a disease so that all these relevant researches benefit from better funding.<sup>5</sup> This line of thought has rapidly crossed the Atlantic to England, where scientists have had breakthroughs of their own in their mission against the signs of ageing<sup>6</sup>, and naturally, also to France<sup>7</sup>, where, for example, researchers have advanced a theory whereby malnutrition would help relent the aging process.

When proposing in discussion the traditional perception towards ageing, the scientific community and the enterprises that agree with this change of paradigm, demand that countries reflect their position on the issue. But the discussion is not simply only about science and technology; it has to be addressed from a socio-economic and even political view of how society treats the ageing process. Moreover, when labor markets are constrained and retirement treatment is debatable, Nations need to establish a clear and well-founded position about ageing.

In this sense, what is the role of France in this matter? The status of ageing being a subject with global implications and initiating such behavior as forum-shopping<sup>8</sup> for stakeholders to find jurisdictions supporting relevant research and promoting certain values, the question whether France should or should not engage in this debate is self-evident.

As a country with a long revolutionary tradition in terms of medicine and law, it is fundamental that the national authorities concerned organize an appropriate legal framework to deal with anti-ageing research, especially as there are no specific norms applicable for the time being to this issue, except the general principle of precaution that represents the cornerstone of any French legislation. Under this principle, the legislator is entitled to take protection measures in the event that scientific evidence concerning a potential risk to human health is uncertain and if the stakes are high. However, the scope of this principle is influenced by the evolution of case law on a specific matter, which is in turn influenced by the social and political values of the society at a given time<sup>9</sup>. Putting in place a lawful legal framework could then encourage research-funding<sup>10</sup> to attract the best researchers in the world

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<sup>5</sup> In the USA, the FDA approved in 2016 the first clinical trial that used metformine for indications of anti-ageing.

<sup>6</sup> A study by the researchers of the University of Newcastle (England) published in the FASEB Journal reveals the effectiveness of Tiron, an antioxidant that protects skin from the effects of ageing induced by UVA sun rays and stress. Available at: <http://www.topsante.com/senior/beaute-anti-age/soins-anti-age/anti-age-le-tiron-lantioxydant-du-futur-53031> (accessed February 14, 2017).

<sup>7</sup> The team of geneticist Hugo Aguilaniu discovered a hormone producing the effect of a drastic diet also increasing longevity. New findings are published in the journal Nature communications. Available at: <http://www.pourquoidocteur.fr/Articles/Question-d-actu/8446-Des-Francais-sur-la-piste-d-une-pilule-contre-le-vieillessement> (accessed February 14, 2017). Also, the team of Jean-Marc Lemaître (Inserm) managed to reprogram in 2011 the cells of the elderly: "We showed that we can erase marks from cellular ageing. Based on gene expression, metabolism and proliferative capacity, the reprogrammed cells have the characteristics of "young" cells. For example, their telomeres that had been shortened became longer."

<sup>8</sup> The company BioViva, whose manager tested anti-aging treatment on herself as it was impossible to carry out such experiments in the current legal French (or EU) framework, has prospected for states that provide regulatory framework that allow such clinical trials to be undergone since 2015.

<sup>9</sup> Charles's research

<sup>10</sup> Today, research focused on aging represents in France a derisory sum of a few hundred thousand Euros per year. In comparison, about € 150 million per year is invested in cancer research (Inserm, CNRS, CEA ...). The 3rd Cancer Plan (2014-2019) is endowed with € 1.5 billion, half of which is supposed to fuel innovative

– provided that France decides this is a debate in which she wants to take part.

Furthermore, the stringent issue at hand arises from the rapid evolution of this kind of scientific research. The anti-ageing tendencies started with lotions and moisturizers containing mainly natural and traditional ingredients thought to fight wrinkles, and addressing female audience mainly, the demand for such products has motivated companies to expand their research into uncharted territory lacking a legal framework. This matter has thus become a source of concern as with time, not only a variety of enzymes, proteins or chemicals have been developed to fight early signs of ageing, but even more interestingly, researchers started focusing not only on the signs of ageing, but on ageing itself.

In order to contextualize the issue, it is highly important to understand that the current discussion is being held mostly in academic circles, aiming to draw the attention of corporations and governments in determining whether science and law should broaden the status of ageing.

Opinions on the issue vary. On the one hand, part of the the scientific community claims that ageing should not be considered a disease because seeking to extend human lifespan beyond its natural threshold is ethically objectionable as it is, by definition, unnatural<sup>11</sup>. A supporting argument states that ageing in human beings occurs with a statistical frequency of 100%<sup>12</sup>, thus making it a normal condition as diseases are defined as an abnormal condition.

On the other hand, scientists who consider ageing to be a disease highlight that medicine and technology could intervene in the ageing process in order to slow down the deterioration of the human body and extend the lifespan of the human species. It is argued that ageing is the main cause of death and age-related diseases, so subsequently targeting the cause directly would be the best way to enhance human living<sup>13</sup>. Ageing does not only lead eventually to death, but it is the main cause of chronic diseases in the world today<sup>14</sup>.

In this sense, neither definition of “ageing” or “disease” is precise enough to allow a simple answer to the question at hand. Specifically, for instance, ageing is defined as a process that leads to the malfunctioning of certain internal parts in organisms followed by the onset of diseases and, finally, death<sup>15</sup>. From this point of view, almost every medical and scientific professional agrees that improving health conditions and reducing pain and mortality caused by age-related disease is a common goal. However, given the universal occurrence of ageing,

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research. Following the € 1.6 billion Alzheimer Plan (2008-2012), the Neurodegenerative Diseases Plan (2014-2019) amounts to € 470 million.

<sup>11</sup> Leon R. Kass. 2004. *Life, Liberty And The Defense Of Dignity The Challenge For Bioethics*. 1ère éd. brochée. San Francisco: Encounter Books; Callahan, Daniel. 1990. *What Kind Of Life: The Limits Of Medical Progress*. Washington, D.C.: Georgetown University Press.

<sup>12</sup> Caplan, Arthur L. 2005. “Death As An Unnatural Process”. Online. *Embo Reports* 6: S72-S75. doi:10.1038/sj.embor.7400435.

<sup>13</sup> de Magalhães, João Pedro. 2014. “The Scientific Quest For Lasting Youth: Prospects For Curing Aging”. Online. *Rejuvenation Research* 17 (5): 458-467. doi:10.1089/rej.2014.1580.

<sup>14</sup> Gems, David. 2015. "The Aging-Disease False Dichotomy: Understanding Senescence As Pathology". *Frontiers In Genetics* 6 (212). doi:10.3389/fgene.2015.00212.

<sup>15</sup> Zavoronkov, Alex and Bhupinder Bhullar. 2015. "Classifying Aging As A Disease In The Context Of ICD-11". *Frontiers In Genetics* 6 (326). doi:10.3389/fgene.2015.00326.

it is difficult to include it among any of the existing classification of diseases<sup>16</sup>. Alternatively, a disease is also defined as a definite pathological process having a characteristic set of signs and symptoms, i.e. a state of the body or the mind that deviates from a norm. Unlike age-associated diseases, ageing itself cannot be easily translated into such a process.

Nevertheless, there is an undeniable causal link between the two phenomena, as aging is the main cause of chronic diseases in the world today<sup>17</sup>. From a biomedical point of view, the fact that ageing is a treatable condition is an essential factor in deciding whether ageing is a disease or not<sup>18</sup>. However, while there have been important findings in this area (though still based on animal studies) leading to the conclusion that genetic modification may be used to extend lifespans while maintaining health levels<sup>19</sup>, research is still far from declaring that ageing is truly “curable”. As such, science seems to fail to give a proper answer to the question whether aging could be considered a disease, and this is the reason why the intervention of the CCNE in this area becomes increasingly important. Given the existing normative vacuum on an issue of concern and relevance to us all, the potential perspectives proposed by the CCNE as the most respectable institution active in both the ethical and medical field would be highly contributive and navigational to the national as well as international norm-setting discourse.

Therefore, a policy debate centered on the ethical, socioeconomic and health issues raised by treating ageing as a disease should be commenced immediately. We would like to put under consideration the following issues as a means to introducing the discussion in which we invite the CCNE to make a deep reflection on the mentioned and further issues potentially arising from the debate.

Firstly, from a social point of view, it is important to note the obvious consequence of considering ageing a disease, concretely, that as much as half of the population on the globe would be declared sick. As it is already increasingly difficult for people over the age of 40 to find a new workplace, declaring them sick could impair their situation even more. Moreover, many social mechanisms, such as transfer of knowledge and cultural traditions from one generation to another, values ageing as it is associated with wisdom being transferred to the young. Treating age as cancer or AIDS will definitely impact and change the existing paradigm for the worse in what concerns the position of elderly in the society.

Additionally, another potential consequence to have in mind is the fact that overpopulation has been associated with change of regimes from democratic to a more totalitarian state<sup>20</sup>. Moreover, from an economic point of view, finding a cure against ageing could lead to an utopian world where overpopulation would impair living conditions all over the globe. We already live in a world of insufficient resources, so increasing life expectancy would only

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<sup>16</sup> See the WHO classification of diseases.

<sup>17</sup> Gems, David. 2015. "The Aging-Disease False Dichotomy: Understanding Senescence As Pathology". *Frontiers In Genetics* 6 (212). doi:10.3389/fgene.2015.00212.

<sup>18</sup> Gladyshev, Timothy and Gladyshev Vadim. 2016. "A disease or not a disease? Aging as a pathology". *Trends in molecular medicine. Series: Current trends in aging and age-related diseases* 22 (12): 995-996. doi:10.1016/j.molmed.2016.09.009.

<sup>19</sup> de Magalhães, João Pedro. 2014. "The Scientific Quest For Lasting Youth: Prospects For Curing Aging". Online. *Rejuvenation Research* 17 (5): 458-467. doi:10.1089/rej.2014.1580.

<sup>20</sup> Roberts, David D. 2006. *The Totalitarian Experiment In Twentieth-Century Europe: Understanding The Poverty Of Great Politics*. p.275. London: Routledge.

lead to more resource-availability problems also further deepening the gap between developed and underdeveloped countries. Housing possibilities could become an issue as well with urban planning regulations facing serious challenges while space conquest would become increasingly germane.

Labor opportunities would also represent a sensitive factor, as technological improvements including the evolution of artificial intelligence seem to lead the way to replacing routine jobs with standardized robots. In other words, elderly people deemed “sick” would run a higher risk of unemployment. On the other hand, increasing the retirement age and improving health conditions so that people could work until their 80s or 90s would imply that a smaller percentage of public funds would be allocated to pensions thus allowing this money to be spent otherwise for the well-being of the society<sup>21</sup>. Limited so far to only a few societies, the significance of the debate concerning universal income would presumably spread to be translated into complex overarching policy-making decisions.

Additionally, the implications of the ethical approach that the State and practitioners take on this matter will define the way the medical practice is held. Currently, age is a standard way to classify patients for the access to certain treatments and transplants as the patient's expected life-span is taken into account when authorising the procedure. If ageing were to be considered a disease, and not just a natural and inevitable process, then the criteria of life expectancy itself could no longer serve as a constraint to accessing treatment.

Also, treatment of age-related diseases currently represents an outstanding 80% of all health expenses in France, and is estimated to reach 95% by 2050.<sup>22</sup> This amounts to 160 billion euros, 120 of which are reimbursed by social security plans. As such, by preventing ageing altogether, costs caused by age-related diseases could be drastically diminished thus overall benefiting the society<sup>23</sup>.

Finally, access to treatment may generate an unequal relationship between developed and developing countries. Resulting from income and wealth disparities, an uneven balance between people who can afford the cure and those who cannot leads to the ethical issue of the value of life: are rich people entitled to live longer than poor people?

Hopefully, the string of issues touched above illustrate the importance of deciding the role that the Republic should play in the discourse on ageing as fundamental notions of well-being, scientific development and progress are at stake, and thus demand to be duly dealt with within the right legal framework.

Taking into account the above, we submit for consideration the proposition that the honorable Comité reflect upon the social, economic, legal and bioethical implications of the classification of ageing and, in particular, we exhort the distinguished Comité to consider

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<sup>21</sup> For example, on the 1st of January 2016, the French government decided to allocate € 700 million per year to the single issue of the adjustment of societies to population aging. However, direct healthcare costs sharply increase with patients' age.

<sup>22</sup> Open Letter for a National Plan to Combat Aging, French Transhumanist Association. Available at <http://transhumanistes.com/lettre-ouverte-a-francois-berger/> (accessed February 14, 2017).

<sup>23</sup> Open Letter for a National Plan to Combat Aging, French Transhumanist Association. Available at <http://transhumanistes.com/lettre-ouverte-a-francois-berger/> (accessed February 14, 2017).

whether or not we should grant ageing the status of a disease.