Biogerontologists’ duty to discuss timescales publicly
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Abstract
Aging is unpopular with the general public—but, it would seem, only up to a point. Treatments that claim (sometimes justifiably) to extend the total and/or healthy lifespan of elderly people, or even just make them look younger, are welcomed with open wallets throughout the world. If, however, one suggests to the typical non-biologist—or even to the typical non-gerontologist biologist—that we should therefore aim, in due course, to take this desire to its logical conclusion and bring aging under the same degree of control that we presently have over most infectious diseases, one is nearly always met with strong and sometimes strident opposition. I argue here that the prevalence of this outright irrationality is largely the fault of gerontologists themselves. Most people harbour a deep-seated fear of profound change in their lives, and embrace it only after extensive soul-searching to convince themselves of its benefit. It cannot and should not be denied that a post-aging world would be as profoundly different from today’s as we can imagine. Hence, when given the opportunity to postpone sober consideration of its pros and cons, most people leap at that opportunity. It is provided to them by the nearly universal refusal of gerontologists to speculate about the timescales within which truly effective rejuvenation therapies may be developed. I suggest that this reticence, while appropriate in purely scientific fields, is hugely irresponsible in a biomedical discipline, on account of its potential to delay the development of such therapies by denying them the funding that would be forthcoming if society had greater optimism concerning their foreseeability. Arguments that such funding, and/or the public’s trust in scientists, would be short-lived if timescale predictions were not borne out are too flimsy to outweigh this. A further danger is the avoidable loss of life following the development of rejuvenation therapies that would result from inadequate ability to provide them universally; here again, scientists today can minimise this loss of life by agitating for forward planning by government, which will only occur when policy-makers’ minds are concentrated by timescale predictions.

The market for products that stave off the ravages of old age to a modest degree, perhaps making one look and/or feel ten or even twenty years younger than one thinks one would without them, is huge in all industrialised nations, particularly the USA. Similarly, the enormous amount spent on medical care to combat—again only to a modest degree—age-related diseases is apparently considered money well spent, including in countries in which it is mostly derived from taxation. But the idea of improving very considerably on present-day therapies, to the extent of doubling or perhaps even extending indefinitely the human lifespan potential, is not greeted with such enthusiasm: indeed, it generally elicits outright hostility in those who feel uninhibited from showing such a response and a robust effort to change the subject in those who do not. Since it cannot for a moment be denied that the defeat of aging is the logical extension of treatments whose desirability the public so assiduously demonstrate, something very odd is going on in the minds of the large majority of the developed world who regard putting off aging a little as wonderful but putting it off a lot as ghastly. Why?

This paradox becomes even starker when the views of the relevant scientists are examined. With very few exceptions, biogerontologists do not subscribe to the public consensus concerning the more ambitious goal: they regard human aging as a wholly undesirable phenomenon whose postponement and cure would
be of incalculable benefit to humanity, albeit at the (hopefully temporary) cost of considerable turbulence as civilisation adjusts to its new circumstances. When society regards the views of the scientific community so highly in other walks of life, how can this dislocation be explained? And is it legitimate for us as biogerontologists to leave it to others to seek such an explanation, as most of us habitually do, or is it our responsibility to explain it?

Many biogerontologists appear to feel that they do not have such a responsibility. Perhaps this is due more to psychological than to conscious factors: the prevalence of comments from laypeople along the lines of “Who would want to spend all that time being old?”, “Wouldn’t we get terribly bored?” or “How would we pay for all those pensions?” fills many of us with such awe at their breathtaking stupidity that any ardour to persist in a patient explanation of what success in this endeavour would actually mean is rapidly sapped. But this is not a legitimate reaction to such inanity, in my view. To put it simply, it is just not plausible that people are really that dumb. Hence, before we abandon our fellow man to his misconception, we as biogerontologists are duty bound to seek a more satisfactory basis for the persistence of these extraordinarily transparently flawed opinions [1].

On doing so we are forced, it seems to me, to acknowledge that one very simple reason fits the facts: denial. Non-biogerontologists are not equipped to evaluate reliably the likely rate of progress towards a cure for aging, and they know it. They also know, therefore, that once they let themselves believe that aging might truly be cured in time to let them (or their children) live for many centuries, they will become susceptible to possibly the greatest disappointment that we can imagine if progress is slower than they anticipate. Hence they prefer to pretend, however absurdly, that such an advance would not be so great anyway; this provides a modest protective barrier against the terror of thinking of aging as we really should, i.e. as the greatest scourge to which mankind remains universally exposed. Only a modest one, however – certainly, I claim, inadequate to maintain such denial in the face of authoritative statements of realistic timescales for the advent of real anti-aging medicine. This is why we biogerontologists, who are acutely aware of our responsibility not to suggest unrealistically optimistic timescales for the defeat of aging, must also be aware—which, by and large, we are evidently not—of our converse responsibility not to suggest (or imply, by silence) unrealistically pessimistic timescales. We possess unique influence over society’s willingness to continue to condemn people to a (by future standards) hugely premature death in decades to come by delaying the defeat of human aging.

I should stress that I do not consider biogerontologists to have been at fault in this matter for very long—arguably for no more than about five years. This is because until quite recently there was no such thing as an unrealistically pessimistic timescale for the advent of real anti-aging medicine: it was too far off to be foreseeable. Since the turn of the millennium, however, such a stance has not been justifiable. To be sure, there remain aspects of age-related decline that we do not have a detailed understanding of how to repair—in fact, when it comes to the fine details, this applies to most, if not all, such aspects. But we do now have a thorough understanding of what those aspects are—a list, which we can be fairly confident is exhaustive, of the things that give a healthy 40-year-old a shorter remaining life expectancy than a healthy 20-year-old—and a specific description of already-feasible ways to reverse large parts of them, sufficient, if implemented, to be highly likely to double or treble the remaining life expectancy of middle-aged mammals [2,3].

Let us be clear about the scale of all this. Fixing aging is tricky, to be sure, and will take time—but the sooner we start seriously trying to do it, the sooner we will succeed. It is simply incorrect to suppose that serendipitous discoveries in years to come will entirely determine the date at which aging is cured: just as fortune favours the prepared mind, scientific luck is partly made by those who benefit from it. To deny this presents two huge and immediate dangers to humanity. One is that funding will continue not to be adequately targeted to the translational research that can make real anti-aging medicine a reality as soon as possible; the simple fact that over 100,000 people die every day of causes that kill virtually no one under 30 demonstrates the gravity of that error. The second danger is that the laboratory breakthroughs which convince society that real anti-aging medicine is on the way, and which therefore turn our lives
upside-down overnight, will occur before governments have had time to forward-plan to make the transition to a post-aging world as smooth and rapid as possible.

Both these dangers are exacerbated by biogerontologists’ perpetuation of their once-justifiable stance of refusing to discuss timescales. It is not good enough to say that we will eventually control aging: “eventually” is not a word that makes people change their pension or life insurance plans, or politicians their spending priorities. Hence, alien though it may be to the basic scientist’s way of thinking, we as specialists in the biology of aging can no longer shrink from publicly estimating the timeframe for the arrival, if not of real anti-aging medicine itself, then at least of the laboratory breakthroughs mentioned above. I consider it highly likely that within ten years from now, if the rather modest necessary funding is forthcoming, we will have the ability to take a mouse cohort with a three-year life expectancy, when it is already two years old, and treble its remaining life expectancy (that is, give it a total life expectancy of five years). I also consider it highly likely that the announcement of that degree of control over mouse aging will almost instantly overturn society’s prevailing fatalism concerning any chance of personal benefit from real anti-aging medicine. The sooner that moment comes, and the readier we are to exploit it when it does, the better—and we had better do all we can to expedite it, or it is we, the scientists of aging, who will bear the greatest blame.

References