“Think deep, do good science and do not panic!”
A few considerations on the corona crisis

The monumental importance of the measures taken around the world in the fight for control of the current COVID-19 pandemic during the past few weeks motivated us to express through this text a few considerations and comments on this hugely important topic. Dr. Joel Kettner[1], professor of Community Health Science at Manitoba University and Medical Director of the International Centre for Infectious Diseases declared recently: “I have never seen anything like this… I am not talking about the pandemic, because I have seen 30 of them, one every year… But I have never seen this reaction, and I am trying to understand why...” We do too, and wish to share our thoughts through these lines. Dr. David Jones[2] declared recently, concerning the corona crisis, in the New England Journal of Medicine: “History suggests that we are actually at much greater risk of exaggerated fears and misplaced priorities”.

Corona and other common cold viruses

The common cold, as its name indicates, is the most common human infectious disease and affects people all over the globe. Adults have typically two to three infections per year, and children even more. Rates of symptomatic infections increase in the elderly due to reduced defense mechanisms. Over 200 virus types are implicated, the main ones being rhino-, corona-, adeno- and enteroviruses as well as influenza, parainfluenza, human respiratory syncytial and metapneumoviruses. Studies out of different countries were reviewed by Wodarg[3] (see among others Nicholson et al.[4]), showing that corona viruses are present year after year in 7-15% of winter respiratory tract infections (RTI). Every year indeed, these common cold viruses invade the planet in wintertime of the northern hemisphere and mutate to get entry into our organisms, and reproduction inside our cells. We are thus dealing with a cyclic viral planetary invasion with high contagious capacity, in this sense a pandemic, which, because it is so well known and most of the time benign, activates no significant fears in the population and most of the time low interest from microbiologists.

Like the SARS-CoV-1 of 2002-2003 and the MERS virus of 2012, the SARS-CoV-2 is a corona virus which is thought to have mutated from an animal. The next essential characteristic of a virus, after its contagiousness, is its lethality for the human population. Roussel et al.[5] have just published that common (i.e. pre-SARS-CoV-2 mutation) corona viruses had in France an estimated mortality of 0.8% in 2016. They analyzed in addition 4 common corona virus strains between 2013 and 2020, which had mortalities between 0.36 and 2.7% (381 other corona strains diagnosed before 2017 were not assigned to this study). Data from the OECD and from France (Roussel et al.[5]) show a SARS-CoV-2 mortality of 1.3% and 1.6%, respectively. These data are fundamental to demonstrate the following: SARS-CoV-2 displays no higher mortality than its older companions. It must however be realized that viral RTIs can be threatening to old, sick and weakened human beings. The mortality rate of the common cold can go indeed as high as 8% in elderly nursing homes (Ioannidis[6]).

Diagnostic tests

We have at the time no idea of the presence (prevalence) of the SARS-CoV-2 in the human population. The journal Le Monde[7] published a detailed review on 26 countries showing an average 10% of tests being positive, and Capek[8] cites values staying between 10 and 15%. Interestingly, the presence of common cold corona viruses in yearly RTIs worldwide is 7-15% (see above). These data speak for a usual presence of the SARS-CoV-2 this year as compared with the one, each year, of older corona strains. They contradict the existence of a progression of the SARS-CoV-2 infections beyond the usual yearly rate.

Common cold viruses display a high contagiousness level, due among other factors to the fact that a large majority of their infections, estimated between 80 and 99.5%, are non or mildly symptomatic. As around 20-40% of the population get an RTI in winter, we are led to the conclusion that a very large proportion of the population must harbor common cold viruses including the SARS-CoV-2 corona strain. Confirming this line of thought, Gupta et al.[9] from Oxford University have drafted a model suggesting that a large part of the population has already been infected by the SARS-CoV-2 virus, going through a mild or an asymptomatic infection. Testing its presence in the population just confirms this reality, and the (obviously!) growing number of positive tests should in no way be interpreted as a sign of an unusual propagation of the virus. This interpretation is one of the two main panic activation factors at the source of

the current worldwide panic wave. The only useful side of a progressively larger testing of the whole population would be to bring the mortality rate down by including mild (rhinitis, coughing, no fever) and asymptomatic infection forms.

Mortality

The World Health Organization and numerous experts have communicated to the world a crude mortality rate for COVID-19 of 3.4%, causing panic: this indicates (erroneously) a danger for the population around 30 times higher than with the influenza virus, which is estimated at 0.1%. In addition to the idea (not the evidence, as discussed above) of an exceptional pandemic, this statement represents the second essential panic activation factor. The approach here is to count the number of deaths over the number of positive tests performed. As tests are in general not performed on persons affected mildly or without symptoms, this approach ignores their high presence, estimations for it, going for COVID-19 from 82-90% in China (Li et al.[10]) up to 99.5% in Germany (Bhakdi[11]). Such a crude mortality rate is thus inadequately high, not providing the centrally relevant information: the number of deaths calculated over the total of infections by a given virus, including all clinical forms, from asymptomatic to fatal ones. This mortality rate is the one representing the real danger the human population is exposed to when getting infected: it is the infection mortality rate. It is to be noted that the type of calculation followed by Roussel et al.[5] (mentioned above) was considering the death percentage on the positive tests performed, with high crude mortality values. The usefulness of this study resides however, as discussed above, in the comparison between the mortality of the older and the current SARS-CoV-2 corona strains.

Ioannidis[6] estimates an infection mortality rate for COVID-19 between 0.05 and 1%. Assuming a mid-range mortality value of 0.3% and a 1% infection rate, it would correspond to 10’000 deaths for the USA. This surely is an impressive number, it would however stay buried within the noise of the estimate of deaths from usual seasonal RTIs. The European Monitoring of Excess Mortality for Public Health Action[12] reveals that, till year week 13, no global

European excess mortality can be seen as compared with earlier years, the death toll trend for 2019-2020 is in fact slightly lower than for earlier years. Confirming this, the German Robert Koch Institute[13] documented end of March a nationwide decrease in activity of acute RTIs, with the number of hospital stays caused by them being below the level of previous years and currently continuing to decline.

Roussel et al.[5] remind us that every year around the world 2.6 million people die of RTIs. Today, at the end of March and of the RTI season, we may really hope that the SARS-CoV-2 strain will not be the "killer virus" which was profiled and which produced such an intense and worldwide reaction. A revealing comparison can be made with the yearly mortality of influenza infections, estimated between 0.5 and 1 million worldwide. In Switzerland where the death toll of the flu is estimated at an average of 2'000 deaths per season, we live, like all other countries around the world, with this cyclic reality, and have integrated it fully in our personal, social and national lives (Osterloh and Frey[14]). With the COVID-19, Switzerland remains, end of March, with a lower death toll.

As of today, we have not yet a final estimation of the infection mortality rate of the COVID-19. The data described above indicate a value at or below the one of the flu. Bendavid and Bhattacharya[15] proposed indeed estimations of the infection mortality rate of the COVID-19 between 0.01 for the US and 0.06% for Italy (based on the testing of the whole population of the town of Vò), values close to the ones proposed by Ioannidis[6], and below the 0.1% rate of the flu.

If the monitoring of the global (e.g. European) death toll does not show any excess mortality during the 2019-2020 season, it is nevertheless true that a local increase is present in northern Italy. In the city of Bergamo for example, 652 deaths (all causes of death included) were reported between January 1. and March 21. of this year versus 386 in the same period of 2017, during the last bigger flu wave. An interesting fact is that in the same period the city of Milano has recorded 3'283 deaths this year versus 3'792 in 2017[16]. Obviously, further analysis of the demographic data and of local factors will be needed.

The detailed Italian official data[17] demonstrate a very high relevance for mortality of pre-existing morbidities: the average age of deceased patients was 78.5 years old. On a study on 481 deaths, 6 patients (1.2%) had no pre-existing morbidities, 23.5 % had one, 26.6% two and 48.6% three or more pre-morbidities. Nine patients were younger than 40 years old, but at least seven of them had serious pre-existing pathologies. In 84% of Italian therapeutic programs, antibiotics were applied, indicating a high rate of bacterial co-infections. It must

also be kept in mind that the SARS-CoV-2 is often accompanied, in an average of 24% of infections according to Shah et al.[18], by other common cold viruses, so that it cannot always be held primarily responsible for the disease and its consequences.

Following these lines and according to Prof. Ricciardi[19], an analysis of Italian death certificates showed that only 12% of them displayed a direct causality from the COVID-19 virus. This leads to a most significant reduction of the deaths attributable to it. One ends up with a few dozen deaths per day, compared to 20'000 flu deaths per year in Italy. The Italian Civil Protection Service underline in this context the necessity to differentiate between death **with** and death **from** corona virus[20]. This analysis is absolutely essential, should be considered by all countries counting their deaths, and will contribute to get a final correct estimation of the COVID-19 death toll worldwide.

Finally, two additional factors add to the Italian mortality rate: the high average age of the population (with 633'133 deaths[21] for all reasons in 2018, estimated 2'000 deaths per day in winter time) and high air pollution levels. One gets hence the addition of 3 factors reducing strongly the death causality of COVID-19: 1) other viruses because they often come together, 2) bacterial secondary infections, and 3) pre-existing morbidities.

In conclusion, a very invasive virus with a high death toll is the basis for the development of fear and panic in the human population. The statistical considerations above allow us to hope that the SARS-CoV-2 will not be the "killer virus" that we expected. Local factors, like in Italy, may play a significant role. That fear and panic may in themselves cause and increase locally human losses is discussed below.

The alveolar and interstitial pneumopathy (AIP) and the Severe Acute Respiratory Syndrome (SARS)

The AIP[22] affects around 2 million people worldwide and is due to the triggering of an ill-understood abnormal healing response. This response is delayed over around a week in the case of the SARS. Two thirds of AIP are idiopathic, i.e. have no known cause. For the ones with a known etiology, the causes are autoimmune, allergic or infectious. Infectious agents are the corona virus, but also the respiratory syncytial virus and tuberculosis. There is evidence that the autoimmune and allergic dynamics point to the relevance of psycho-

neuro-immunological mechanisms, which, in the presence of an associated genetic predisposition, may trigger overactive deleterious inflammatory responses. Thus, in the AIP, the virus is only the environmental trigger of a process which needs other factors, genetic and psycho-emotional, to develop. In accordance with the presence of an autoimmune response in SARS, Chinese and Italian doctors have applied with success to serious SARS patients a treatment of Tocilizumab[23], a medication useful in the treatment of the rheumatoid arthritis, a well-known auto-immune disorder. We thus propose that emotional factors play a role through the development of the SARS and AIP, in COVID-19 morbidity and mortality. Everybody's life experiences and growing scientific evidence speak for a direct influence of our emotional state on immunity and inflammation processes. This will determine, at the moment of viral invasion, the activation level of our defense mechanisms, closing, or in stress alas opening up a breach allowing a full-blown respiratory infection (including lungs). In the case of an AIP, an overactivation of the organism's immune and inflammation responses can also be induced (named "cytokine storm or release syndrome"[23]).

The role of stress and panic

Stress has been shown to be at the source of cell losses in the limbic (behavioral) brain of animals. It is in position to activate excitotoxic, oxidative, immunological, inflammatory, endocrine and vegetative mechanisms, and to cause in certain conditions the potentially fatal failure of multiple organs. One such situation has been described by ethnologists in the context of a ritual performed by the kurdaitcha man, or shaman of the aborigenic society. It is called "pointing the bone" and causes the so-called "self-willed death", or "bone-pointing syndrome"[24,25]. It consists in the pointing onto a victim of a ritual bone which activates the effect of a "spear of thought" and kills the cursed person over days to weeks, without great suffering. This ritual may have served kurdaitcha men along the millennia when a member of their community would become dangerous. The power of an idea and its related emotion, i.e. fear, is exemplified here in a most impressive and definitive way.

We propose to consider the possibility, in the context of the corona crisis, that a planetary "spear of thought" loaded with fear and capable to kill is active now and threatens the whole of mankind, inducing among other things the development of the AIP and provoking fear-based chain reactions all over the world. Pre-existing and facilitating factors may be the threat of human extinction

by a killer virus as shown impressively in disaster movies, and a current feeling of doomed and dismal planetary state due to pollution. Images have been displayed all over the world of bad science fiction scenes, with human silhouettes installed in beds surrounded by alien-looking fully masked and dressed-up doctors and nurses, dead streets swept with gross disinfectant systems, the close-up picture of the initiating chinese doctor with panicky eyes over a ventilation device, "state of war " declarations to the virus by politicians, faked Italian messages as the one from a mother wanting to convince her child to stay home, emergency military tents filled with persons waiting for the verdict of their test, etc…

In addition, it is interesting to consider that both the SARS-CoV-1 in 2003 and the MERS-CoV in 2012 were corona viruses: they may have paved the way toward a sensitivity of the human environment to a respiratory threat. They were rated as dangerous because they had a high mortality, although their propagation was very limited with a death toll of 770 (SARS-CoV-1) and 850 (MERS-CoV) patients worldwide[26]. The elements for panic generation were in place: death by a killer virus, economic failure and chaos, loss of familial and social support, loss of freedom and isolation due to lockdown measures, helplessness, uncertain future for the human civilization, and the overwhelming fear of losing a loved one without being able to say goodbye. Like the man cursed by the pointing of the bone of the kurdaitcha, the current corona "spear of thought" seems well to be able to hit different body targets and induce multiple organ failure: for example, cardiomyopathy is described in the high percentage of 33% of Italian patients[27]. Fear and anxiety are felt indeed typically at the cardio-respiratory level, with dyspnea (choking feeling) and heart palpitations.

Let us imagine a person, for example in the north of Italy in February 2020, coughing and unwell from an RTI. An immediate fear of getting infected by the COVID-19 virus arises and dominates his mind (I take here the example of a man, as the infection risk is higher for males!). He heard, announced the day before by the WHO, that this virus kills more than the flu (against which he is vaccinated, being 70 years old). He knows that policemen closed the village where he lives, forbidding entry and exit. Being a good citizen, he announces that he suspects a corona infection and is taken in emergency to the local hospital. By arrival, he is placed in a probably uncomfortable and cold tent, in the middle of other fearful citizens, and his SARS-CoV-2 test is performed. Other people cough around him, and he waits for the sentence. His heart beats hard and it seems that he cannot

breathe well. His test being positive, he is taken into the hospital by an efficient but stressed medical team, and gets surrounded by masked nurses. He realizes that he is now no longer free to leave this whole nightmare, to get back home. Panic raises its dreadful head, and his defense mechanisms fall down, opening the way to a full-blown, at his age threatening viral infection. In this state, our patient may experience one of the three following scenarios:

1) At best: he keeps an upper RTI, with a bit of fever, a solid cough through bronchitis, some difficulty to swallow and a full nose. He is kept isolated in the hospital, the staff remains efficient but stressed, very busy and distant, and he stays alone with his fears to get full-blown choking feelings leading so many to the intensive care unit and ventilator. He cannot get the visit of his family and he stays sick with a solid RTI for the next two weeks. Most probably, this experience will stay imprinted for ever in his emotional brain.

2) At worst, first scenario: his age, his long standing suboptimal pulmonary function, his significant overweight precipitate a bronchopneumonia, with combined viral development and bacterial secondary infection by nosocomial germs, leading to death in a few days. He dies without a last contact with his wife and children.

3) At worst again, second scenario: the viral attack on his pulmonary system is moderate and the tissues there begin to recover in proper manner over a week. He keeps a deep feeling of fear and doom, dyspnea arises, a scan is performed showing the presence of an AIP, and he is taken to the intensive care unit. Over the next few days, the “spear of thought” proceeds flying, his pre-existing suboptimal health state limits his resources to overcome the reanimation phase, secondary infections arise, heart failure and failure of other organs develop and he dies, again far away from his family…

Around him and at home, other patients suffering from other health problems are treated suboptimally, all energy, material and staff being concentrated on the corona crisis. It is easy to understand how hospital staffs will be submitted to a huge overload: 1) worried people flow into hospitals, increasing the work load of the medical and nursing teams, 2) teams are reduced by the absence of burned-out collaborators, by the quarantine of others and in some situations by the ones kept away by the closing of borders. Again stress and panic develop and create the pervasive impression of an exceptional and uncontrollable chaos…

The existence of the SARS-CoV-1 and MERS-CoV corona episodes in 2003 and 2012 could point to the possibility of mutations of the corona virus toward a particular pulmonary affinity. Three same or similar, allegedly random mutations are however not likely, and we favor in this context the hypothesis mentioned above of a sensitivity of the human environment to a respiratory threat, a "spear of thought" loaded with fear and threatening the whole human planet...

There are, currently end of March, very significant differences of mortality rates between countries. The respective crude mortality rates (deaths on the number of positive tests performed) are around 0.3% for Germany, 3.6% for France and 7.8% for Italy. For the same countries, the number of deaths per million inhabitants is respectively 7, 40 and 178. We propose that the three following factors, in addition to local factors (see discussion above about Italy), co-influence the amount of critical cases and deaths: 1) the baseline level of anxiety in a given human population, 2) the suppression of basic human social interactions through isolation, and 3) the suppression of democratic freedom by limitation of civil rights. The difference is fundamental between a **recommendation** to the people in the name of the safety for all or an **order** enforced by state-given punishments (including emprisonment). The Swiss government, for example, has managed in such tensed times to pass measures mainly as recommendations and not as orders, counting on the good will and adequation of the Swiss people. Concerning point 2), it is to be noted that the disruption of social bonds is indeed a severe issue for all primate societies, and in non-human primates, isolation can lead to death.

A surely premature review of some national mortality rates worldwide may provide insights favoring this proposition: as an example, Scandinavian countries have mostly respected the freedom of the people, and classical safety measures have been recommended as usually against the flu, without confinement of the whole population. They have among the lowest mortality rates in Europe. A dominant characteristic of fear is to always favor informations that maintain or amplify it and repress the ones which do not. Could it be the reason why the Scandinavian experience is rarely mentioned and if yes, qualified as being nonethical, without discussion of the pros and cons and the risk/benefit ratio of the confinement approach (see below). Fear does not allow good science to be performed, and we badly need good science, now and tomorrow.

Confinement and isolation measures

The rapid adoption in most countries of the strategy to control viral spread with confinement measures has developed, as far as we are aware, without an in-depth, open and balanced analysis of all pros and cons concerning this approach.

As cited by Ioannidis and other experts, there exists only a weak evidence for the efficiency of confinement measures (see Cochrane Database). Evident however are their negative psychosocial effects we have discussed above, and deleterious effects on the world economy are already present and cannot be underrated. Of course, classical measures of decontamination/isolation to reduce viral transmission between individuals are to be recommended, but can be limited around the sensitive members of the population, that is old, sick and weakened individuals. This has been the approach of Scandinavian countries. A general lockdown approach does not seem to make sense from many aspects. Firstly, the rapidity with which European countries lost track of the chain from patients 1 onward underlines a well-known extreme contagiousness, questioning even the possibility to stop the propagation by tracking the virus and its carriers in the whole human population. This happened in Italy in a matter of a day or two, and in spite of very fast and extensive isolation measures. Common cold viruses have probably developed a great experience through their yearly planetary invasions, and tracking them as well as establishing lockdown measures does not seem to be the proper thing to do when one realizes that, as discussed above, they distribute themselves worldwide over millions of individuals (see the Oxford model above) during the whole winter season.

The next argument is centered on the regularly proposed necessity to flatten the epidemy distribution curve to reduce the death toll. This approach does not consider the existence and relevance of the “herd or population immunity”. With it, the larger the amount of immunized people in the human population, the less dangerous the viral epidemy can be.

The application of general distancing and confinement measures leads unavoidably to all sorts of questionable decisions. Even worse, different measures, which make minimal or even no sense, may be imposed by states and implemented/increased by fearful individuals. In any case, in the name of the safety of all, states appeal to the duty of all individuals to accept limitations of their civil rights and freedom. This move should be limited to recommendations,

and not orders accompanied by punishment: the readiness of the people must remain the dominant factor, and the people should not be threatened by a government they have themselves chosen. The subject of the adoption of more or less strict measures creates unavoidably fractures inside the social group. Movements come up proposing different ways, mainly through electronic media, to increase the penetration into the private sphere of individuals in the name of epidemic control, notwithstanding the fact that any population control is a danger to democracy. When a discussion arises on this theme, anybody demanding for a maintenance of her/his private sphere is opposed by the arguments 1) that the fact that one has nothing to hide should bring no problem, and 2) that in the case of epidemic prevention, one surely does not mean to limit safety measures to protect everybody. In the case of our country, the Swiss federal council has shown a most solid position and insisted to maintain as low as possible the temporary limitation of the Swiss people's freedom and civil rights, resisting firmly journalistic pressures.

As examples of questionable lockdown measures, let us mention first the school stop, which backfires onto grandparents induced to provide child care. This measure is not evidence-based, i.e. there is no available scientific study demonstrating its efficiency, it has been introduced from country to country because another country had done it before. Population immunity mentioned above has to be addressed here. Leaving children interact at school and playground and leaving the young (below 65) adult group work and also interact can be seen as the best way to advance herd immunity and thus protect the whole population, knowing in addition that these two age groups have an absolutely minimal risk to be endangered by the SARS-CoV-2. There are thus sound reasons to doubt the usefulness of the introduction of this measure, and we may even envisage that it could be counterproductive.

The closing of public and natural spaces, particularly parks in cities, makes no sense: if people are demanded or obliged to keep distance in the streets, are they going not to do so in parks, where by the way more place is there for them to keep distance? The contact with nature and fresh air, as mentioned by the Danish government, will be of utmost importance for the well-being of inhabitants of large cities, before or after they go out for food, work or other primordial activities. With this measure, they are unjustly limited in comparison with people living in the country.

Among other highly questionable measures, the suppression/limitation of the access to the medical and spiritual domains is fully inappropriate, deleterious and inhumane. Not only COVID-19 patients but also all the other patients hospitalized for other reasons cannot get their visits. In general, but particularly now in the middle of the crisis, the support by dear ones is part of social and spiritual functions which should never be touched or withdrawn, taking the risk to alienate human beings from their vital psychosocial and spiritual environment. Why couldn't a close visiting family member apply the same safety precautions in the hospital as the medical staff do? And religious services could be performed with the same distance recommendations as for other civil sessions, which have been maintained because they are considered indispensable.

Lockdown and isolation practices have been taken by many with an amazing amount of ethics, patience, courage, adaptability, inventiveness and humor. As they block the young and active part of society, they may produce along time significant psychosocial and economic harm, risking to destabilize society in a worldwide manner. Rather sooner than later, they will have to be cancelled by governments.

Experts, politicians and media

In the domain of biology, and particularly studies of large biological structures and dynamics, detailed analyses considering all sides of a phenomenon are essential, to avoid biased views and inappropriate conclusions and decisions. Biology is not mathematics, physics or chemistry, its complexity requires the integration of multiple dimensions and the adoption of a hopefully well-based interpretation. In the intensive and extensive, worldwide field of the corona crisis, an open, deep, careful, multidimensional and thus unbiased study of the whole situation with presentation of pros and cons and risk/benefit balance analyses is fundamental. Medical experts, mainly microbiologists and epidemiologists, are the ones to provide these informations to politicians. They have to realize that they hold in their hands the power to modulate the state of mind of the whole human planet, and that they have to carefully avoid to activate a worldwide powerful chain reaction of fear and panic. In the aftermath of the corona crisis, an open, deep and constructive analysis will have to be performed, with the goal to avoid the future repetition of current errors.

Politicians represent their people and, in this function, have the difficult role to protect them when necessary. They have the right and the duty to ask from their experts the open, detailed and unbiased analysis just mentioned. Governments should make at best propositions which are the product of their sound and balanced analysis. These propositions will often be compromises between extremes (a tradition in our country!), and being thus moderate, they will be more readily accepted by the people. And, as discussed above, this approach may take away one of the three panic activation factors we propose, i.e. the reduction/suppression of democratic freedom. The public must be informed in an open and reassuring way, and negative informations should be balanced by positive ones, maintaining hope in the population. There is nothing questionable to provide hope in a balanced information context. In addition, a government would make something deeply constructive by congratulating its people for its courage and adequacy…

Media have as role to relay informations from all possible environments and tendencies. As exemplified particularly clearly in the current situation, they should avoid to exert pressures on politicians, and be deeply aware that they can contribute to the worldwide activation of powerful anxiogenic mechanisms if they do not provide balanced informations from controlled sources.

The very fast and overwhelming distribution of the current panic has as one facilitating factor the spreading efficiency of social media, which have been instrumental in profiling, through biased and even fake news, a situation in Italy as more chaotic than it really is. Of course, positive news are also distributed by social media, but an anxious environment tends, as discussed above, to maintain itself by the relay of dominantly anxiogenic informations.

Conclusion

As of today (end of March 2020), a death toll of around 35’000 worldwide is being attributed to COVID-19. This is of course a high number but still much less than the flu, which kills every season between half a million and a million people. There are 2.6 million deaths worldwide every year due to RTIs. The world is, in the middle of the corona crisis, mesmerized by one mutated corona virus like hundreds of other ones spreading over the whole world every year. It presents no evidence of higher mortality than its earlier yearly mutations. Diagnostic testing is being interpreted as a way to follow the epidemic propagation, whereas

it only reveals (partially) the ubiquitous and collaborative presence of common cold viruses worldwide. The mortality rate of COVID-19 has been calculated as the percentage of performed tests coming out positive, not integrating the strong mortality reduction allowed by the presence of a high percentage of mild or asymptomatic disease forms. Fear and panic were kindled by these two inaccurate scientific communications and spread over the whole planet like a bushfire, causing the chaos we observe every day on the News. Scientific experts, politicians and media people will have to deeply realize the importance of providing well-based unbiased informations and recommendations. The corona crisis has brought to light that the human planet has currently a high anxiety level and must be treated gently, just like a human patient in a sensitive phase of her life!

There is no way for us to conceive life without viruses. They are everywhere, around 50% of our own genome is of viral origin, and the virologist Prof. Moelling brought documented arguments in her book that viruses are "more friends than foes"[28]. Our main foe is fear activated by a biased and heartless science. We are with most viruses in a win/win and need/need interaction: we cannot live without each other. No party has advantage to eradicate the other. Older pandemics, which are at the source of deep atavic plague memories, were in most cases due to bacterias and related closely to precarious human life conditions. The only catastrophic viral pandemic was the 1918 H1N1 flu, which killed millions, but developed in the chaotic and unhealthy aftermath of the first world war. Panic seems to be no appropriate, even no feasible way to integrate our interaction with viruses, it would guarantee us a future filled with fear for the next pandemic and repeated panic states and destabilizations of the worldwide human environment. A bleak future, indeed not desirable at all. Avoidable though if we apply this: **to think deep, to do good science, and not to panic**…

Daniel Jeanmonod MD, Professor Emeritus of Neurosurgery at Zürich University and Physiology & Neuroscience at New York University

Roxanne Jeanmonod, Physical Therapist

Francis Neirynck, Civil Engineer

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